

# Descriptions of New Genera and Species of Hymenoptera taken by Mr. Robert Shelford at Sarawak, Borneo.

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This paper is a continuation of one describing the new genera and species contained in the Sarawak Museum and those captured by Mr. Shelford at Sarawak, published in the Journal of this Society, No. 37, January 1902.

## SIRICIDÆ.

### *Xiphydria erythropus*, sp. nov.

Black, the scape of the antennæ and the legs dark red, the wings dark fuscous-violaceous, the nervures and stigma black, the head and thorax closely rugosely punctured, the greater part of the vertex and the upper half of the front broadly; in the middle smooth and shining, ♂.

Length 16 mm.

Hab. Matang, 3600 feet.

Front coarsely rugosely punctured, the punctures running into reticulations in parts; its centre is furrowed; the furrow is punctured on either side, the punctured band becoming wider towards the apex. On the smooth part of the vertex, at the apex, is a deep transverse furrow; behind, in the centre, is a narrower, shallower longitudinal furrow. Face irregularly longitudinally striated; the clypeus is piceous; its apex is broadly roundly incised. Mandibles opaque, sparsely punctured; their teeth are smooth and shining, large and broadly rounded. Thorax coarsely rugosely punctured: the pleuræ more coarsely than the mesonotum and more or less reticulated; the propleuræ smooths and with the central depression bearing some stout keels. The central lobe of the mesonotum has a deep furrow in the centre which is stoutly transversely striated; on the apex in the centre are 4 longitudinal keels. The fore tarsi and the

apical joints of the posterior are black. Except on the inner sides and apices of the lobes the median segment is closely punctured; the basal 4 segments are broadly furrowed across the base: these furrows are closely longitudinally striated.

*Xiphydria melanopus*, sp. nov.

Black; the wings fuscous violaceous: the head rugose, the vertex smooth, the thorax coarsely rugosely punctured and reticulated throughout; the lateral and central furrows on the mesonotum wide, closely transversely striated, the lateral curved and becoming wider towards the apex, ♀.

Length 17 mm.

Hab. Matang.

Mandibles at the base closely punctured and thickly covered with white hair. Middle lobe of mesonotum coarsely irregularly reticulated; the lateral lobes on the inner side less strongly and more irregularly reticulated, on the outer almost smooth; the furrows become gradually wider towards the apex. Scutellum rugosely, coarsely punctured, except at the apex, which is smooth and shining; it is longitudinally furrowed down the centre. Abdomen as in *X. erythropus*.

Apart from the difference in colour this species may be known from *erythropus* by the much wider, broader at the apex, more rounded and closely striated middle lobe of the mesonotum, by the front having a large deep round depression and by the thorax being more strongly punctured,

TENTHREDINIDÆ.

*Monophadnus trichiocerus*, sp. nov.

Black, shining; the clypeus, labrum, the apex of the femora, and the tibiæ, the upper edge of the pronotum and the tegulæ whitish-yellow; abdomen testaceous, darker towards the apex; the wings from the transverse basal nervure fuscous-violaceous, the stigma and nervures black, ♀.

Length 9 mm.

Hab. Matang.

Antennæ short stout; the basal joint testaceous, the apical joint rufous beneath; they are thickly covered with



stiff black hair. Centre of vertex bordered by wide and deep furrows, in front by a narrow oblique one; the front is deeply depressed, narrowly above, widely below. Apex of clypeus transverse. Labrum large, rounded in front. Mandibles pale yellow, rufous at the apex. The apical segments of the abdomen are narrowly edged with black at the apex; they are darker coloured than the basal and have a faint but distinct, violaceous tint. Legs covered with white hair; the apex of the hinder tibiæ black.

*Selandria iridipennis*, sp. nov.

Dark blue, the labrum, the coxæ, trochanters and the base of the tibiæ broadly white; the front wings fuscous, with a violaceous tint and highly iridescent; the stigma and nervures black; the hinder wings clear hyaline, ♀ and ♂.

Length 9 mm.

Hab. Kuching.

Antennæ thickly covered with stiff black hair. Front and vertex closely and distinctly punctured, the vertex not raised; the lateral furrows shallow, indistinct; on the centre of the front is a large wide fovea almost transverse in front, rounded behind, and having a smaller round fovea on either side. Clypeus closely and distinctly punctured. Labrum smooth. Base of mandibles closely punctured. Legs thickly covered with white hair; the claws bifid. The 1st transverse cubital nervure is widely interrupted in the middle.

CYNIPIDÆ.

*Mesocynips*, gen. nov.

Abdomen sessile, large, ovate, its middle as wide as the thorax, its basal 4 segments of equal width, the apical 2 longer. Antennæ stout, 13-jointed; they are placed near the top of the head. Eyes ovate, widely separated from the base of the mandibles, the malar space being longer than their length. Clypeus depressed, separated from the face, obliquely narrowed towards the apex, which is transverse. Mandibles stout, broad, bidentate, the teeth broadly rounded. Vertex stoutly, longi-

tudinally keeled; the front being also bordered below by a stout keel. The apex of the pronotum is sharply keeled; this keel is continued down the middle of the propleuræ obliquely, their apex being also keeled. Mesonotum and scutellum stoutly transversely striated. Scutellar fovea large, deep and stoutly keeled in the middle. The metanotum is bordered laterally by a stout keel and outside this, on the pleura, is a stout curved, irregular keel. Radial cellule short, the radius curved not reaching half way to the apex; the areolet is small, elongate, narrow, closed below by a thick pseudo-nervure; the cubitus reaches to the apex of the wing, it really issues from the radius, for a transverse cubital nervure can hardly be said to exist. The costal, median and submedian cellules are all distinct; the externo-median nervure is distinct, the discoidal nervure is distinct and reaches close to the apex of the wing, it is interstitial with the externo-median nervure.

The ovipositor is long and issues from the base of the abdomen, is straight and its sheaths are curved and project; the hypopygium is short and does not reach to the apex of the abdomen. Legs stout, pilose; the front calcaria are curved, the basal joint of all the tarsi is much the longer; the middle 3 are small; the apical large, but not quite so long as the basal one; the claws are large, curved, simple.

This new genus will form a new subfamily of *Cynipidæ*. It has the form of *Cynips* but differs from that in the abdominal segments being of almost equal length, and in the straight, not curved, ovipositor. The subfamily *Ibaliinæ* may be known from it by the long, cultriform abdomen, which has, as in our subfamily, the segments about equal in length. It has the alar nervures better developed than in the other subfamilies and in that respect resembles *Mesocynips*, whose systematic position is probably between the *Ibaliinæ* and the *Cynipinæ*.

*Mesocynips insignis*, sp. nov.

Ferruginous-yellow, the yellow tint more noticeable on the sides; the flagellum of the antennæ infuscated, paler towards the apex; the mesonotum and the basal half of the scutellum

strongly, sharply transversely striated; the wings dark smoky-fuscous; the base to the transverse basal nervure and above to the base of the stigma bright yellow: the apical nervures fuscous-black; the basal bright yellow, ♀.

Length 10 mm.

Hab. Kuching.

Head shining, sparsely punctured; the middle of the face raised and more closely and distinctly punctured; the face, front, vertex and occiput covered, but not thickly, with longish pale fuscous and white hairs. Apex of the mandibles broadly, deep black. Thorax smooth and are shining; the pro- and meso-sparsely, the meta thorax thickly covered with long pale hair. Centre of metanotum smooth; the sides somewhat shagreened. Abdomen shining; the back and apical segments covered with long pale fuscous hairs; the penultimate segments punctured; the last much more strongly and deeply punctured. Femora sparsely, the tibiae and tarsi thickly covered with pale hairs; the claws blackish.

This species is probably identical with "*Cynips*" *insignis*. Smith, described, Proc. Linn. Soc. 1857, p. 117, from Sarawak. It is in no sense a *Cynips* in the modern meaning, and belongs to the parasitic branch of the family. To prevent the making of a synonym I have used Smith's name in case an examination of Smith's type would prove it to be identical with the species I have described.

#### CHALCIDIDÆ.

##### *Leucospis erythrogastra*, sp. nov.

Black, the ventral surface and apex of abdomen rufous mixed with yellow; a large broad mark on the inner orbits, rounded at the top and bottom and roundly curved inwardly on the inner side, a large somewhat heartshaped mark-narrow above incised below—below the antennae, a smaller, somewhat similar mark below it, a line, dilated at the sides, on the base of the pronotum, a slightly broader one, not reaching to the edges, on its apex, 2 oblique irregularly oval marks on the centre of the mesonotum, a longish, broad line on its sides, slightly incised on the innerside, the sides of the scutellum from near the base and

its apex more broadly, a large curved line on the post scutellum, a large mark on the mesopleuræ narrowed and rounded below, its top at the base and apex—the apex more widely—obliquely narrowed, the greater part of the base of the metapleuræ—the mark straight at the base, the apex rounded and its top part wider than the lower, a large curved—its top rounded—oblique mark on either side of the 1st abdominal segment, a broad transverse line on the 2nd, a large curved one on the 3rd, which is dilated roundly backwards at the side and is then continued along the lower edges to the base of the segment, 2 small oblique marks on the top of the 4th, yellow; the remaining segments and the ventral surface rufous, mixed slightly with yellow. Legs yellow, the fore-femora broadly above, the middle broadly, irregularly at the base, a large curved mark on the outside of the hinder-narrow at the top becoming gradually wider towards the bottom—the lower edge and the teeth, the hinder tibiæ broadly below on the inner and outer sides and their calcaria, deep black. Wings almost hyaline, the fore pair infuscated broadly in front, the nervures black.

Length 11 mm. ♀

Hab. Kuching.

Except the front, the entire head and body is strongly and closely punctured; the face and clypeus are more closely and finely punctured than the rest; the front above the antennæ is smooth and shining; the scutellar depressions are strongly, distinctly, but not very closely, striated; the lower part of the pro- and mesopleuræ depressed and smooth and shining, this part on the mesopleuræ being obscurely finely striated around the edges. There are 7 teeth on the hinder femora: the basal one is short, blunt and indistinct; the 2nd is not much longer, but more distinct and broader; the middle 3 are very much larger, longer and more widely separated; the 6th is distinctly shorter than the 5th; and the 7th is shorter and less distinct than the 6th. The hinder tarsi are rufous: the 4 anterior dark yellow; the hinder coxæ are rufous on the under side at the apex and have there a yellow mark. The ovipositor reaches to the apex of the scutellum.

*Megacolus apicipennis*, sp. nov.

Black, the tarsi dark rufo-testaceous; the basal half of the

Jour. Straits Branch

wings to the ulna smoky-fuscous, the ulna fuscous, the cubitus black, the apex of the wings milky-white; the hinder femora with 7 teeth; the ovipositor stout, two-thirds of the length of the body, ♀.

Length to the commencement of the ovipositor 10 mm.; the ovipositor nearly 4 mm.

Hab. Kuching.

Head and thorax coarsely, closely rugosely punctured; the front is stoutly keeled down the middle and is stoutly transversely striated on either side of the keel; the face is sparsely covered with glistening white hair. The upper part of the propleuræ is smooth and is depressed at the base, the lower is irregularly striated. The basal third of the mesopleuræ is depressed and is irregularly, widely striated. The base of the pronotum is obliquely depressed and is irregularly transversely striated. The apex of the scutellum broadly projects in the middle and is there roundly incised. Median segment coarsely reticulated; at the base on the sides is a large area roundly narrowed at the apex; between them are 3 areæ of which the central is the larger, and it is widened at the apex; on the sides of the segment is a large projection, wide at the base, roundly narrowed towards the apex; the apex of the segment triangularly projects. The basal three teeth on the base of the femora are short, broad and bluntly rounded; the others are more distinct; the apical two are closer to each other than the pair in front of them and are less prominent.

*Megacolus rufiventris*, sp. nov.

Black; the abdomen bright rufous; the tarsi, four front knees and the apices of the 4 front tibiæ rufo-testaceous; the hinder femora with 6 irregularly separated not very prominent teeth; the wings hyaline, with a faint fulvous tinge; the nervures dark fuscous; the ovipositor black, very stout, as long as the abdomen, ♀.

Length 9; ovipositor 4 mm.

Hab. Kuching.

Head and thorax coarsely rugosely punctured; the pro- and mesopleuræ closely reticulated; there is a smooth band at



the base of the latter which has on the upper part, 7 keels (the lower 3 separated from the upper) and below are 3 more widely separated longitudinal keels. Front stoutly keeled down the centre and closely transversely striated. Pronotum transversely striated at the base; on its apex is a smooth narrow band. The projecting apex of the scutellum is prominent and ends in two rounded lobes. Metanotum coarsely irregularly reticulated; its sides near the base, project into a stout, sharply pointed tooth and there is a shorter one near the middle. On the apex of the basal third of the hinder femora is a short tooth somewhat triangular in shape, followed by an indistinct one at some distance; following this, and separated by a less distance, is a sharper, longer; more distinct one, at about the same distance from this is a stouter one, immediately behind this a short blunt indistinct tubercle-like one, followed on the apex by 2 stout keels of which the hinder is somewhat the larger. Tegulae rufous. The head, thorax and legs are covered with a silvery pile.

Closely allied to *Megacolus* is the following new Indian genus.

*Megachalcis*, gen. nov.

Antennae placed over the base of the clypeus, 11-jointed, the 2nd joint cup-shaped, the 3rd much longer and narrower than it. Scutellum large, roundly convex, its apex transverse. The sides of the metanotum project at the base above and have a stout tooth in the middle. The base of the mesosternum has a stout tooth in the centre; the fore coxae have a rounded leaf-like expansion on the apex above. Hind femora regularly toothed. Basal abdominal segment longer than all the others united; spiracles on the 3rd large; the last large, elongate and forming a sheath for the ovipositor, which is stout and twice the length of the abdomen.

The occiput is margined, more sharply above than on the sides. Base of metanotum areolated. Five segments are on the abdomen as seen from the side, but only four from above. Sheaths of ovipositor stout, broad, pubescent and round on the apex. Hinder coxae nearly as long as the femora. Pronotum large, roundly produced in the middle at the base.



Comes nearest to *Megacolus*, Kirby, which differs from it in having the antennæ 12-jointed and in the scutellum ending in a raised, bilobate plate behind. The 1st abdominal segment is, in *Megacolus*, half the length of the remainder.

*Megachalcis fumipennis*, sp. nov.

Black; the 4 front tarsi and the hinder tibiæ piceous, the hinder tibiæ ferrugineous; the wings smoky, the nervures deep black; hinder femora with 10 teeth of nearly equal size, ♀.

Length 12; terebra 10 mm.

Hab. Khasia (coll. Rothney).

Scape of antennæ, head, median segment and sides of abdomen thickly covered with silvery pubescence; the tarsi on the underside are thickly covered with stiff pubescence and bear, on the apices of the joints, stiff spines. Sides of the head in front coarsely rugosely punctured, the punctures running into reticulations; the vertex closely punctured; the outer orbits bear shallow, scattered punctures. Apex of clypeus roundly, but not deeply, incised; the part between the antennæ raised, transverse below. Pro- and mesonotum rugosely punctured, the punctures running into reticulations. The scutellum is more widely reticulated; it is flat above; at its base, laterally, the mesonotum forms two large rounded masses, opposite the tegulæ. The base of the median segment is flat, smooth; on the middle are five stout, longitudinal keels; the outer side is deeply foveate. The apex of the segment has on the top a large, deep, fovea, rounded behind, transverse below; below this are 2 or 3 irregular reticulations; the sides project largely and have, shortly beyond the middle, a large, somewhat triangular tooth. Propleuræ irregularly reticulated behind; the apex below and the lower part depressed, the mesopleuræ deeply and widely depressed, smooth, obscurely and finely striated in the middle. Metapleuræ regularly reticulated. Abdomen smooth and shining at the base, the 2nd segment broadly in the middle and the others entirely and more strongly punctured.

*Epistenia longicollis*, sp. nov.

Purple mixed with green and blue; the flagellum of the

antennæ black, the 4 anterior trochanters, femora, tibiæ and tarsi, the hinder trochanters, base of femora, apex of tibiæ and base of tarsi narrowly, rufous; the flagellum of the antennæ black, the scape for the greater part green; the wings hyaline, the nervures and stigma dark fuscous. ♀.

Length 12 mm.; ovipositor 2 mm.

Hab. Kuching.

The clypeus and the basal half of the mandibles are dark rufous, the latter covered with longish hair. Face and front for the greater part golden; the face covered with curved striæ, which are finer and closer on the inner half of the malar space, the latter being clearly separated from the outer part, which is minutely and finely striated. The front is rugose between and above the antennæ; this central part is wedge-shaped and bounded by the wide antennal furrows; the part between this and the scape is blue and finely transversely striated. Pronotum broadly depressed in the centre; the sides broadly rounded and finely and closely transversely striated; the pleuræ are finely and closely covered with curved striæ. The middle lobe of the mesonotum irregularly transversely striated; its base is dark blue; behind this is a green band; the rest is dark purple, except for a green band at the tegulæ; the apex of the middle lobe is transversely striated, except round the edges; in the centre are two curved, deep furrows. Scutellum somewhat strongly and closely longitudinally striated; it is dark purple, with a blue band on the base. Median segment green; the centre purple; this purple part is narrow at the base and becomes gradually and roundly wider towards the apex; it bears 4 or 5 stout, irregularly curved keels; the parts bounding this are stoutly striated and are raised above the sides, which are finely and closely rugose. Mesopleuræ for the greater part green, finely, closely and irregularly striated; the lower part is clearly separated off and is closely irregularly reticulated, except at the base which is raised and finely and closely punctured. The base of the metapleuræ is almost smooth above; below covered with fine curved striæ; above is a deep, distinct curved crenulated furrow, Abdomen dark purple the basal five segments, above and below. with narrow, longish rounded green lines on the outer edges.

The fore coxæ are for the greater part purple; the fore femora have a large green mark on the top; the apices of the 4 front femora are paler than the rest of them; the 4 hinder tarsi are dark testaceous.

*E. imperialis*, Sm., from Sarawak may be known from this by the ovipositor being two-thirds of the length of the abdomen and by the legs being black. In our species the anterior ocellus is larger than the two posterior and is placed in front of them about double the distance these are separated from each other; the ocellar region is an elongated oval and is clearly separated from the eyes; the vertex behind them is depressed. The prothorax is long, two-thirds of the length of the mesothorax; the head is almost double its width; the metathorax is fully half the length of the scutellum; the incision on the apex of the 3rd dorsal segment is better marked than it is on the basal two.

#### EVANIIDÆ.

##### *Evania malayana*, sp. nov.

Black; the palpi white; the wings hyaline iridescent, the nervures and stigma black; the mandibles with a testaceous band behind the teeth; the face with a small raised point in the centre, ♂.

Length 11 mm.

Hab. Kuching.

Face, clypeus and mandibles thickly covered with white pubescence, smooth and shining. Front irregularly striated; the striæ more or less intersecting and forming narrow elongated, irregular reticulations; in the centre is a moderately stout longitudinal keel. Hinder ocelli separated from each other by not quite half the distance they are from the eyes. Malar space closely and finely striated, the striæ obliquely curved. The central lobe of the mesonotum bears shallow, irregular punctures; the scutellum is less distinctly and more finely punctured; metanotum closely reticulated; in the centre the reticulations are closer, longer and narrower; laterally larger and rounder. At the apex the propleuræ bear some shallow elongated foveæ; near the bottom the meso- bear a broad, somewhat oblique band of punctures; the meta- closely and almost uniformly reticulated.

The metasternal keel is sharply raised; the fork is stout, short and broad, the sides straight, the apex bluntly rounded. The 2nd transverse cubital nervure is obsolete; the cubitus distinct; the lower part of the apical abscissa is rounded: the upper straight and oblique. The petiole above between the middle and apex, is irregularly longitudinally striated; the sides more stoutly obliquely striated. Tibiæ and tarsi thickly covered with short stiff black pubescence and more sparsely with short black spines; the calcaria are black; the front tibiæ and base of tarsi are pale testaceous in front.

*Erania violaceipennis*, sp. nov.

Black; the scape and the basal joints of the flagellum beneath, the mandibles, except the teeth and the 4 anterior femora and tibiæ in front, pale testaceous; the posterior tarsi except the apical joint, white; the wings uniformly dark violaceous; the nervures and stigma black. ♀.

Length 11-12 mm.

Hab. Kuching.

Face and clypeus opaque, alutaceous: the apex of the clypeus rounded; the malar space alutaceous; they are all thickly covered with silvery pubescence. Front longitudinally striated throughout; the striæ all distinctly separated; the central is the stouter. The hinder ocelli are separated from the eyes by almost double the distance they are from each other. The middle lobe of the mesonotum is indistinctly, irregularly reticulated. The part at the sides of the scutellum behind is stoutly, obliquely striated. The metanotum is closely, rather strongly, irregularly punctured, except at the apex which is smooth. Propleuræ almost entirely smooth; the meso- smooth, indistinctly punctured below, above with a raised, slightly oblique, band of stout striæ; the meta- are stoutly, regularly reticulated. The tibiæ are thickly covered with stiff black hair and sparsely with black spines. The apical abscissa of the radius is roundly, broadly curved inwardly; the first recurrent nervure is received distinctly beyond the transverse cubital; the 2nd transverse cubital nervure is obsolete. The sternal keel is stout; the metasternal process is stout, the forks diverge outwardly,

are stout, roundly curved and bluntly pointed at the apex. Petiole smooth above; its apical half laterally stoutly, obliquely striated.

## STEPHANIDÆ.

*Fœnatopus fuscinervis*, sp. nov.

Black: the head dark red; the vertex blackish; the basal joints of the antennæ pale rufous; the wings clear hyaline; the nervures and stigma pale fuscous; the abdominal petiole twice the length of the following joints united; the prothorax twice the length of the mesothorax, ♂.

Length 13 mm.

Hab. Kuching.

The scape of the antennæ is not much longer than the 2nd joint, which is slightly more than one half the length of the 3rd; the 4th is as long as the 2nd and 3rd united. The apical three frontal tubercles are stout, narrowed, but not sharply, above; the hinder pair are smaller and more rounded. Face closely rugosely punctured; its sides finely and closely transversely striated. Vertex closely, distinctly transversely striated and indistinctly furrowed down the middle, the furrow not breaking the striæ. The inner orbits are distinctly margined; the outer are pale yellowish. Prothorax closely and rather strongly aciculated, except at the apex which is testaceous in colour; there is a curved, not very stout keel on the apex; a stout keel runs between the tegulæ; the middle of the mesonotum is deeply depressed, the depression with some transverse striæ, and it is rounded at the base and apex. The base of the metanotum is widely depressed; in the centre are 2 stout straight keels; outside these is a thinner one; outside these a stouter oblique one and the edges are also keeled. The rest of the segment is stoutly reticulated, except the lower part of the metapleuræ, which is smooth, except for 4 stout, slightly oblique keels. Mesopleuræ sparsely punctured at the base and apex. Petiole very long and slender, closely striated; the sides, except on the apical fourth, furrowed; the sides of the 2nd and 3rd segments are testaceous. The alar stigma is long, nearly as long as the radial nervure; it is pale in the centre, pointed at the apex from



where the radius leaves it; the radius has the basal abscissa oblique and curved; the apical is straight and is about one fourth longer than it. The 4 anterior coxæ, trochanters, tibiæ and tarsi are testaceous; the basal half of the hinder femora is coarsely rugosely striated; there is a blunt, broad, not prominent, tooth behind the middle of the hinder femora; a stout one beyond the middle, a smaller one nearer the apex and 3 short teeth between these which are fuscous below.

*Stephanus Ceylonicus*, sp. nov.

[Black, a pale spot below the eyes; the 4 front legs piceous; the wings clear hyaline; the nervures and stigma black; the petiole as long as the rest of the abdomen united; the hinder femora with 2 teeth; the ovipositor broadly white at the apex. ♀.

Length 28 mm.

Hab. Trincomali, Ceylon. (Yerbury).

Antennæ black; the 2nd joint of the flagellum is distinctly shorter than the 3rd, which is slightly shorter than the 4th. Vertex closely covered with stout, curved striæ, which are stouter and more regularly curved before than behind; the 3 front teeth are stout and of nearly equal size, the hinder are almost obsolete. Face irregularly transversely rugose; above the punctures run into curved striæ. The narrowed basal part of the pronotum is closely, stoutly, transversely striated, but only sparsely at the extreme base; at the end of this is an impunctate space, the apex has a band of large deep punctures in the middle; the sides have some scattered, deep punctures. Scutellum impunctate. The depression at the base of the metanotum bears stout longitudinal keels; the part behind this is covered with round clearly separated punctures; the apex is irregularly, transversely reticulated. Propleuræ covered with stout, oblique striæ; the meso- almost impunctate; the meta-smooth, below with stout curved striæ, which form almost reticulations. Petiole closely striated. There are 2 large, widely separated teeth on the hinder femora, the hinder being slightly the larger; there is a short, broad, bluntly rounded tooth, immediately behind the posterior large one; and this is followed by a much smaller one.



The wings have a steel-coloured iridescence; all the nervures are complete; the basal abscissa of the radius is distinctly shorter than the apical; it is straight, not curved, and is slightly angled near the base. The ovipositor and abdomen appear to be stouter than usual; the former is as long as the body.

In Schletterer's arrangement (Berl. Ent. Zeits. xxxiii, 117) this species would come near *S. hæmatipoda*, Mont.]

BRACONIDÆ.

BRACONINÆ.

*Iphiaulax*, Foerster.

i.—*Wings fuscous, the head, more or less of the thorax, and the fore legs, red.*

*Iphiaulax Shelfordi*, sp. nov.

Black, shining, the head, pro- and mesothorax, the front legs and the middle coxæ, trochanters and femora, red: the 1st, 2nd and basal half of the 3rd abdominal segments strongly longitudinally striated; the wings fuscous, the under side of the stigma, the upper half of the 1st cubital and the base of the radial cellule to the end of the stigma, orange-yellow. ♀.

Length 15 mm.; terebra 95 mm.

Hab. Kuching, February.

Antennæ black, shorter than the body; the scape 3 times longer than broad, of equal width throughout; the 3rd about one-third longer than the fourth. Front of vertex smooth and shining, their sides sparsely haired. Face strongly punctured, except in the centre above the clypeus, where it is depressed. Clypeus smooth, bare, except at the apex, twice broader than high, its sides above broadly rounded. Mandibles rufous, black at the apex, the middle closely and finely striated. Metanotum covered with black hair; its apical slope rather strongly longitudinally striated. The raised apical part of the petiole is depressed and smooth in the middle; the sides are stoutly, irregularly striated; the apical half of the lateral depression is stoutly transversely striated. The 2nd segment is closely, strongly longitudinally striated except on the

basal lateral depressions and in the centre at the apex; the basal area is finely and closely longitudinally striated; it is twice longer than its greatest width and becomes gradually narrowed towards the base and apex, the apical part being almost twice the length of the basal. Radial cellule long and narrow; the 2nd cubital is, on the lower side, nearly 3 times the length of the first and is distinctly longer than the 3rd. There is a small fulvous cloud on the base of the fore wing on the apical side. The ovipositor has the sheath thickly haired at the base and has a broad white band near the apex.

The legs are only shortly and sparsely haired; the parapsidal furrows are deep; the scutellar depression is shallow and irregularly striated; the hypopygium is large and projects beyond the cerci and is brownish in colour.

Comes near to *I. insignis*, Sm. *sec.* Szepligeti Termész. Füzetek, xxiv, 372, but that species is larger (20 mm.) and has the ovipositor shorter compared with the body; has the 3rd and 4th segments striated, the 3rd antennal joint hardly longer than the 4th, the scape only twice longer than broad, etc.

*Iphiaulax Kuchingensis*, sp. nov.

Length 12 mm.; terebra 45 mm.

Hab. Kuching, February.

Agrees in colouration with *I. Shelfordi* but is smaller, more slenderly built and has the ovipositor shorter compared with the body, the radial cellule is not fulvous on the basal part, the apex of the petiole is not distinctly transversely striated; its central apical part is more strongly and distinctly longitudinally striated; the area on the base of the 2nd segment is not so distinctly defined and is continued as a keel to near the apex of the segment, there being no keel on *Shelfordi*; there are on it two lateral oblique keels bordering and limiting the basal half of the segment; and the apical two-thirds of the ovipositor are white.

Scape of antennæ cylindrical, not hollowed, becoming gradually wider towards the apex; its length about twice of the width at the apex. Face, except immediately over the centre of the clypeus, closely and coarsely punctured and covered with

stiff black hairs; the clypeus smooth, except on the apex, where there is band of black hair; above it is broadly rounded and has a distinct margin. Mandibles black at the apex; the base bare, the middle covered with long hair. Metanotum thickly covered with long black hair; on the apex in the middle are some irregular striæ. On the apex of the petiole are 3 irregular longitudinal keels, with one or two small ones; the 2nd segment is strongly striated; the striæ are mostly oblique and curved; the central keel is bordered by short round ones; the basal half of the 3rd segment is strongly, longitudinally striated; the remaining segments smooth. The fore legs are rufous-like the thorax; the middle femora and base of tibiæ of a darker rufous colour. The stigma is rufous below; there is an obscure fulvous cloud in the 1st cubital cellule; the 2nd cubital cellule is shortly, but distinctly longer than the 3rd.

*Iphiaulax reticulatus*, sp. nov.

Black, head, pro- and mesothorax and the anterior legs rufous; the scape below and a line on the middle femora dark rufous; the wings dark fuscous; the basal 4 abdominal segments closely longitudinally striated; the basal plate on the 2nd segment large, its length the width of the base, smooth; the apex obscurely finely striated; the keel extends to the apex; the raised part on either side of it is coarsely reticulated: the sides of the apex are more closely reticulated; at the base and middle coarsely obliquely striated. ♀.

Length 18; terebra 21 mm.

Hab. Kuching, February.

Scape of antennæ long, as long as the 4 following joints united; the 3rd joint is not much longer than the 4th. Head smooth and shining; the face covered with black hair; the clypeus shagreened, projecting, rounded behind. Front not depressed, a deep furrow with wide oblique sides above. Mandibles rufous, their teeth black. Middle lobe of mesonotum distinctly raised and separated from the lateral; its base bluntly rounded. There is an elongated fovea on the apex of the metanotum, bounded by a V-shaped keel below. Tibiæ and tarsi covered with moderately long hair. The raised part of the

petiole has a keel in the centre: it is raised and rounded at the base and does not extend to the apex; the apical half, on either side of it, is irregularly reticulated; second segment stoutly irregularly reticulated: the depression is stoutly, closely obliquely striated; the raised outer apical part is closely rugose and with some striæ. The 3rd and 4th segments are close, uniformly longitudinally striated. Wings, except for a narrow oblique cloud at the base and one below the 1st cubital cellule, dark fuscous, with a slight violaceous tinge; the 2nd cubital cellule above is slightly longer, below a little shorter than the 3rd.

*Iphiaulax patrous*, sp. nov.

Black: the scape of antennæ, head, thorax and forelegs ferruginous, the middle femora piceous; the wings fuscous; the 2nd 3rd and 4th abdominal segments closely longitudinally striated; the 2nd segment reticulated in the middle, the keel broad, extending to the apex; the dilated basal part broad at the base, becoming gradually narrowed to near the middle of the segment: its base smooth, the rest closely covered with twisted longitudinal striæ. Sheath of ovipositor densely pilose, broad: the apical third white; it is twice the length of the body. ♀.

Length 13 mm.

Scape of antennæ long, of equal width, longer than the 2nd and 3rd joints united; the 3rd joint shortly, but distinctly, longer than the 4th. Face closely and distinctly punctured, except in the middle, which is raised and smooth. Clypeus punctured below: it becomes obliquely narrowed towards the top which is transverse and is not dilated like the lower part. The ocellar region and the middle of the front depressed; the vertex sparsely covered with long hair. The raised part of the petiole is smooth and depressed at the base and has a shallow furrow in the middle; the apex has a keel down the middle and bears some stout, mostly transverse, keels. The lateral depression on the base of the 2nd segment is large, irregularly striated in the middle, narrowed at the base and with a large fovea at the base and on either side at the apex; the base of the 3rd segment is smooth laterally at the base and depressed there especially at

the sides; the middle of the segment is depressed and striated. The 4th segment has a large, smooth depression on the base at the sides. The legs are covered with black hair, which is longest on the posterior pair. The 2nd cubital cellule is slightly shorter than the 3rd.

This species is closely related to the species I have, with some doubt identified as *B. foveatus*, Sm. This agrees with it in colouration, but is larger and more stoutly built (16 mm.): the 2nd cubital cellule on the top is equal in length to the 3rd; the apex of the petiole is not stoutly, irregularly transversely striated; the lateral depressions on the 2nd, 3rd and 4th segments are larger and deeper, the keel on the 2nd segment is more distinctly defined and the longitudinal striation on the abdomen is stronger.

*Iphiaulax mareotis*, sp. nov.

Black, the head, pro- and mesothorax and the lower half of the metapleuræ ferruginous; the anterior legs, the middle coxæ, trochanters and femora rufous, the middle tibiæ dark rufous; the wings dark fuscous, the stigma and nervures black; the 1st and 2nd abdominal segments, the greater part of the 3rd and the 4th and 5th broadly in the middle longitudinally rugose; the furrows on the 2nd, 3rd and 4th segments are crenulated; the keel on the 2nd segment extends to the apex; the plate is longish and is stoutly longitudinally striated. ♂.

Length 15 mm.

Hab. Lingga.

Face thickly covered with long hair; its centre bare, smooth and shining; its lower sides have a yellowish tint. Front deeply excavated laterally; the hinder ocelli each bordered by a deep curved furrow behind. Clypeus transverse in the middle above, its sides rounded. Metanotum thickly covered with black hair. The petiole is more roundly convex than usual; the sides of the 2nd segment are not depressed at the base; the 3rd to 6th segment have a large roundish fovea on the sides near the middle, the foveæ becoming successively smaller. There is a faint curved cloud in the 1st cubital cellule at the base and a clearer, smaller pyriform one below the lower part of the 1st transverse cubital nervure; the 2nd abscissa of the radius is slightly, but distinctly, longer than the 3rd.



*Iphiaulax Wallacei*, sp. nov.

Black, the head, scape of antennæ, thorax and 4 front legs, ferruginous; the wings uniformly dark fuscous, the face with 2 deep short furrows in the centre immediately below the antennæ; the petiole with a narrow longitudinal keel down the centre, almost entirely smooth; the 2nd and the basal half of the 3rd segment closely longitudinally striated; the keel is broad at the base, becomes gradually narrowed to the middle, is closely longitudinally striated and extends to the apex of the segment. The suturiform articulation is deep, closely longitudinally striated and with both lateral branches deep, narrow, straight, oblique and striated. Sheaths of the ovipositor broad and thickly covered with longish black hair. ♀.

Length 15 mm.; terebra 18 mm.

Hab. Kuching.

Antennæ originating from prominent, almost biarticulate, tubercles; the scape longer than the 2nd and 3rd joints united; the 3rd and 4th joints are equal in length. Front hardly excavated; there is a narrow keel between the antennæ; the raised part, separating the furrows below the antennæ, becomes gradually narrowed above. Face in the centre smooth, the sides punctured sparsely and pilose. Clypeus depressed; the top transverse, the sides rounded. There is a short stout keel between the scutellum and post scutellum. Petiole with an irregular band of fine striæ before the middle. The depressions on the base of the 2nd segment are narrow, deep, oblique. The furrow on the 3rd segment is smooth. The hinder tibiæ are deeply grooved on the outer side from near the base to near the apex.

The 2nd abscissa of the radius is as long as the third; the apex of the middle tibiæ and their tarsi are blackish; the metanotum is broadly blackish; the hypopygium does not extend beyond the apex of the dorsal segment; the 2nd segment is square and is longer than the 3rd.

This is a broader and stouter insect than any of the other species here described.

*Iphiaulax syleus*, sp. nov.

Black, the head, pro- and mesothorax and the front coxæ, trochanters, femora and tibiæ, rufous; the wings dark fuscous;

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the apex of the petiole with a stout keel down the centre and 2 or 3 oblique lateral ones; the area on the 2nd segment extends to the middle, becomes gradually narrowed, has raised sides and is irregularly striated; the part bordering it irregularly, stoutly reticulated; the 2nd, 3rd and basal half of the 4th closely, longitudinally striated; the ovipositor thickly pilose, the apical fourth white. ♀.

Length 11 mm.; terebra 14 mm.

Hab. Kuching, February.

Scape of antennæ about 3 times longer than broad; the 3rd joint about one fourth longer than the 4th and about twice the length of the 2nd. Face raised in the centre, flat, impunctate, transverse below, rounded above; the cheeks distinctly punctured. Clypeus raised, narrowed above; its apex as long as its length from the top to the bottom. Palpi blackish. Front not deeply depressed, the depression not including the ocelli. Scutellar depression narrow, closely crenulated, the central part of the 2nd segment is stoutly, transversely irregularly reticulated on the inner side; the outer and the apical parts longitudinally striated; the base laterally is smooth, shining and is not depressed; the outer sides are depressed and stoutly obliquely striated. The two transverse furrows are deep and closely striated; the outer furrow on the 2nd segment is long, wide, distinct and closely striated; that on the third is more curved and striated like the rest of the segment; the basal part is smooth; the curved furrow on the 4th is smaller, narrow, striated, the basal part being also striated. The 4th segment is closely striated to near the apex.

This species is not unlike *I. patrous*, but that has the scape red; the raised central part of the 2nd segment has its sides curved inwardly and is narrower at the apex, the lateral foveæ are not distinctly bordered behind by furrows and the median segment is black.

ii.—*Head, more or less of the thorax and fore legs red, the wings fuscous, yellow at the base.*

*Iphiaulax sadyates*, sp. nov.

Black, the head, thorax and 4 anterior legs ferruginous; the anterior wings yellowish, suffused with fuscous, the posterior

yellow, with the apical third and the lower two-thirds fuscous ; the basal three segments of the abdomen coarsely longitudinally striated ; the basal half of the four in the centre more finely, and the base of the 5th still more finely, striated ; the 4th and 5th segments with a crenulated curved furrow at the base, the plate on the base of the second segment is small, smooth and shining ; a narrow, indistinct keel leads from it to the centre. There is a cloud on the lower side of the 1st cubital cellule, which is continued downwards along the recurrent nervure on the upper half and along the cubital nervure ; the 2nd abscissa of the radius is longer than the 3rd. ♂.

Length 16 mm.

Hab. Santubong, 2600 feet.

Antennæ longer than the body ; the face thickly covered with long hair ; the clypeus rounded above. The petiole is stoutly keeled in the middle ; the striæ on the sides are stout, irregularly curved and more or less broken. The sides are depressed and irregularly striated ; the striæ along the keel run into reticulations. The suturiform articulation and the keel on the third segment are stoutly longitudinally striated ; that on the 4th is less strongly ; there are no apical transverse furrows.

The scape of the antennæ is rufous above ; it is slightly more than twice longer than wide ; the 3rd and 4th joints are equal in length.

*Iphiaulax varipennis*, sp. nov.

Pale yellow, the back of the abdomen, the vertex, the middle of the front broadly, a mark, rounded on the top, in the centre of the face, the sides of the mesonotum and a large mark in its centre at the base, an irregular mark on the base of the metanotum, the mesosternum, a curved mark, narrowed behind, on the centre of the mesopleuræ, two marks on the prosternum and the hinder legs, black. Wings with the basal half, the 1st cubital cellule and a narrow curved spot, dilated below, underneath it, yellowish-hyaline ; the rest of the wing dark fuscous, the hinder wings yellowish hyaline to beyond the middle, the apex dark fuscous, the band on the lower side extending to near the middle ; the basal half of the stigma is orange-yellow. ♀.

Length 13 mm.; terebra 4 mm.

Hab. Matang, 3600 feet.

Antennæ longer than the body, black; the 3rd joint hardly longer than the 4th and twice the length of the 2nd; the scape about 3 times longer than wide and thickly pilose. Head and thorax smooth and shining. The top of the petiole stoutly, irregularly and not very closely longitudinally striated; its sides below pale orange yellow; the centre of the 2nd segment is stoutly irregularly longitudinally striated; the suturiform articulation is crenulated in the middle; the apical segments are narrowly banded with white on the apex.

The ventral surface is marked laterally with black spots; the abdomen is about twice the length of the thorax; the 2nd abscissa of the radius is shorter, but not much, than the 3rd.

*Iphiaulax portius*, sp. nov.

Head and thorax ferruginous, the ocellar region black, the metanotum infuscated; the 4 front legs rufous-yellow; the wings to the stigma yellowish hyaline, the rest fuscous, the base of the stigma yellow; the hinder wings yellowish to the middle below, above beyond the middle; the greater part of the 2nd abdominal segment coarsely longitudinally striated; the 3rd less strongly and distinctly to near the apex; the plate on the 2nd segment large, triangular, its keel slightly shorter than it; the part surrounding it depressed. ♀.

Length 9 mm; terebra 7 mm.

Hab. Kuching.

Antennæ black; the scape triangularly projecting on the apex below; the 3rd joint, shortly but distinctly, longer than the 4th, front and vertex smooth and shining; the face closely rugosely punctured; the clypeus depressed, almost smooth, rounded above, transverse below. The petiole behind the basal slope is irregularly punctured; near the apex it is much more strongly and distinctly punctured: the band is prolonged in the middle and does not reach to the apex, which is smooth. The second segment is smooth in the middle at the apex; the suturiform articulation is crenulated; the furrows on the 3rd and 4th segments are also crenulated, but not strongly. The recurrent

nervure is not quite interstitial, being received shortly behind the transverse cubital.

*Iphiaulax halæsus*, sp. nov.

Ferruginous, the abdomen, antennæ except at the base, and the hinder legs, black; the fore wings to the transverse basal nervure, the 1st cubital cellule and an oblique spot on the upper edge of the 2nd cellule, yellowish-hyaline; the petiole keeled in the centre; the 2nd and 3rd cubital cellules closely longitudinally striated, the basal plate on the 2nd segment elongated, the sides and centre keeled; the keel extends to the apex of the segment. Face sparsely punctured; there is a square depression below the antennæ. Parapsidal furrows distinct. Petiole broad, as long as the 2nd segment: its lateral keels indistinct at the base. The keel bordering the lateral depression on the 2nd segment is narrow, straight and oblique; the part bordering it on the outside is closely obliquely striated, the apical segments are narrowly lined with pale yellow. Legs moderately pilose; the middle tarsi infuscated.

Length 16 mm.; terebra 17-18 mm.

Hab. Kuching.

Antennæ shorter than the body; the basal two joints obscure rufous: the 3rd and 4th joints are about equal in length; the 2nd abscissa of the radius is slightly shorter than the 3rd; the transverse median nervure is not quite interstitial, being received in the discoidal cellule, but almost touching the transverse basal; and therefore differs from the typical *Braconinæ* in which it is completely interstitial. In other respects the species is a typical *Iphiaulax*.

iii.—*Head, thorax and fore legs red; the wings yellow at the base, hyaline at the apex.*

*Iphiaulax crassitarsis*, sp. nov.

Head, thorax, anterior legs, the greater part of the middle femora and tibiæ and the scape of the antennæ, ferruginous; the basal half of the fore wings yellowish hyaline, the apical clear yellow, the hinder wings fuscous, hyaline at the apex; abdomen short, ovate, broader than the thorax, closely, but not very distinctly or strongly longitudinally striated. ♀.

Length 8 mm.; terebra 6 mm.

Hab. Kuching.

Scape of antennæ fully three times longer than wide; its apex below sharply projecting; the 3rd joint is distinctly longer than the 4th. Face punctured; the clypeus convex; its base rounded; its apex below obliquely depressed; the labrum is distinctly seen below it, and is rounded at the apex. Vertex deeply depressed and with a deep furrow in the middle. Temples obliquely narrowed. The petiole rises straight from the base and forms an angle with the second segment; its base, in the centre, is rufous, its apex closely, rugosely longitudinally striated. The plate on the second segment is smooth and shining; it is large, its length slightly longer than the width at the base; it becomes gradually narrowed towards the apex with the sides curved at the apex; there is no keel issuing from it; the lateral furrows are straight, wide, moderately deep and oblique. Sutureform articulation crenulated; its apical lateral furrows wide, shallow; there is an indistinct furrow on the apex of the segment; and a more distinct, crenulated one on the apex of the 3rd, 4th and 5th segments; the apical segments are clearly separated at the edges. Legs stouter than usual, the hinder pair having the tibiæ and tarsi distinctly thickened; they are thickly pilose; the pile on the front of the middle tibiæ is rufous; the basal joint of the hinder tarsi is thickened. The 2nd abscissa of the radius is slightly shorter than the apical; the 2nd transverse cubital nervure is faint; the stigma is shorter and broader than usual.

iv. *Entirely luteous, the wings fuscous, yellow at the base.*

*Iphiaulax matangensis*, sp. nov.

Luteous, the head and mesonotum paler; the back of the abdomen suffused with black; the wings fuscous, the base to the transverse basal nervure, and a cloud in the 1st cubital cellule yellowish-hyaline; a small hyaline spot below the bottom of the 1st transverse cubital nervure; the stigma black, narrowly yellow at the base; the keel on the 2nd segment is not much dilated at the base, becomes gradually narrowed and extends to the apex. ♀.

Hab. Matang, 2800 feet.



Antennæ longer than the body, entirely black, the scape somewhat more than twice longer than broad, not dilated; the 3rd and 4th joints equal in length. Clypeus rounded on the top, narrow. Front not much depressed, furrowed in the centre. The 3 lobes of the mesonotum are largely fuscous. The raised central part of the petiole is not much longer than broad; is rugosely punctured on the top, its lateral slopes smooth, brownish and bearing 3 keels in the centre; the lateral furrows are wide and deep; the sides above are furrowed and striated. The 2nd segment on either side of the keel is widely reticulated; the sides at the base are depressed and bear curved stout striae. The suturiform articulation is wide and striated; the furrow on the base of the 3rd is smooth; on the 4th closely crenulated; the apical 2 segments are smooth.

*Iphiaulax annulitarsis*, sp. nov.

Luteous, the head more yellowish in tint, the 3rd and following segments black, their apices pale yellow; the apex of the hinder tibiae and of the joints of the hinder tarsi, black; the wings fuscous from the transverse basal nervure, behind it yellow; the basal half of the hinder wings yellow; the stigma black, with a small yellow spot on the base; the antennæ black. ♀.

Length 11-12; terebra 9 mm.

Hab. Kuching.

Scape of antennæ about 4 times longer than broad: the 3rd joint slightly, but distinctly, longer than the 4th. Face and clypeus rugose; the face broadly raised in the centre and with a depression near the apex, where it has an oblique slope; the top of the clypeus is transverse, its sides rounded. Centre of petiole coarsely, longitudinally punctured; the sides on the inner side at the apex, transversely striated. The 2nd segment is closely rugosely punctured; in the centre longitudinally striated; in length the plate is about twice the length of the width at the base; it becomes gradually narrowed, and a narrow keel runs from it to beyond the middle of the segment; the part bordering the sides of the plate is depressed and is stoutly transversely striated. The suturiform articulation and the fur-



rows on the 3rd and 4th segments are crenulated. The 2nd abscissa of the radius is distinctly shorter than the 3rd.

The raised central part of the 2nd abdominal segment is large and has straight sides, it being therefore of equal width; the lateral furrows are closely striated; and are wide at the base. The abdomen is slightly longer than the head and thorax united; it is wider than the latter and is ovate in form.

*Iphiaulax hirpinus*, sp. nov.

Luteous, the antennæ black, yellow at the base; the wings yellowish-hyaline to the transverse basal nervure, the rest dark fuscous, with the stigma black; the plate on the base of the 2nd abdominal segment not clearly defined, not narrowed towards apex and rugosely punctured. ♀.

Length 9 mm. terebra 3 mm.

Hab. Kuching.

Antennæ longer than the body, the scape rufous, black on the middle above, about twice longer than wide; the 3rd and 4th joints are equal in length. Face closely rugose, keeled below the antennæ; the clypeus rounded on the top. Median segment thickly covered with white hair. The central part of the petiole is rugosely punctured; it becomes narrowed towards the apex which is rounded. Second segment stoutly irregularly striated to near the apex; the striae are more or less twisted; the sides are broadly depressed and are finely striated. Sutureform articulation wide, deep and crenulated; the 4th and 5th segments have distinct crenulated furrows on the base; there are also transverse furrows on the apices of the 3rd, 4th and 5th segments. The sheaths of the ovipositor are black and covered with black hair. The 2nd abscissa of the radius is perceptibly shorter than the 3rd; the 2nd abscissa of the cubitus is slightly shorter than the 3rd.

*Iphiaulax amestris*, sp. nov.

Luteous, a broad curved black mark across the ocellar region extending to the eyes, the basal 4 dorsal segments of the abdomen more or less black; the wings yellowish-hyaline to the transverse basal nervure and on the hind wings to near the middle, the rest fuscous-black; the basal third of the stigma yel-

low; there is a cloud in the 1st cubital cellule which extends from near the top, at the base, to the lower apical corner and above extends along the top to the apex; the plate on the base of the 2nd segment extends to the centre and becomes gradually narrowed, the basal five segments of the abdomen are closely longitudinally striated; the abdomen ovate, not longer than the thorax and wider than it. ♀.

Length 11 mm., terebra 8 mm.

Hab. Kuching.

Antennæ longer than the body, black, the flagellum brownish beneath towards the apex; the 3rd and 4th joints equal in length; the scape about twice longer than broad; its apex projecting into a spine. Petiole in the centre finely irregularly longitudinally striated; the depressed sides are broad and are finely, indistinctly striated; the 2nd to 5th segments are closely longitudinally striated, the striation becoming weaker on the apical segments; on the base of the 2nd segment is a straight, narrow, deep oblique furrow, which is sparsely striated, the suturiform articulation is distinctly crenulated; the apices of the 3rd and 4th segments are depressed, smooth and have a narrow indistinct transverse furrow; the lateral furrow on the 3rd segment is broad, curved and striated.

*Entirely luteous, the wings entirely yellow, long, with a black spot at the base of the stigma.*

*Iphiaulax laertius*, sp. nov.

Luteous, smooth and shining; the suturiform articulation stoutly, but not closely, striated in the middle, the other furrows smooth; antennæ for the greater part black; the wings long, yellow, the anterior smoky round the apex of the stigma and the costa at its base, black, the posterior pair smoky at the apex and round the apical lower margin, the cloud becoming gradually narrowed on the inner side; an oblique cloud at the base of the stigma; the temples obliquely narrowed; the legs thickly covered with long fulvous hair.

Length 13; terebra 7 mm.

Hab. Kuching.

Antennæ longer than the body, the scape rufous and covered with long pale hair. Face and clypeus covered with long

fuscous hair, each originating from a pit; the clypeus behind is bordered by a rounded narrow keel. Mandibles paler coloured than the head; their teeth black. Abdomen shining, impunctate; the suturiform articulation has 7 or 8 stout, longitudinal, clearly separated longitudinal keels in the middle; the petiole is distinctly longer than the 2nd segment and appears narrower than usual; it is depressed at the base; from the base a keel runs to near the apex. The keel on the second segment is smooth and shining; the oblique and lateral furrows on the 2nd and 3rd segments are smooth; there are no transverse furrows on the 3rd and following segments.

*Ipihaulax leptopterus*, sp. nov.

Luteous; antennæ dark brownish, paler towards the apex; the scape black above; the wings long, yellowish, a dark cloud at the base of the stigma along the cubitus and extending shortly beyond the middle of the 1st cubital cellule; the lower part of the apex of the front and the entire apex of the hinder wings smoky; the transverse furrows on the base of the 2nd, 3rd and 4th segments crenulated. Legs thickly covered with longish pale fulvous hair. ♀.

Length 17 mm., terebra 7 mm.

Hab. Matang, 3600 feet.

Face irregularly punctured and covered with long fuscous hair; the middle above indistinctly keeled. The top of the clypeus is transverse in the middle, the sides rounded. Frontal furrow deep. The apical lobe of the pronotum is widely and deeply depressed, the depression is rounded above, transverse at the base laterally at the base, there is a crenulated band. The 1st abdominal segment is longer than the 2nd being in length twice the width of its apex; its centre is stoutly keeled; the keel being larger at the base; the sides of the segment, on either side of it, are irregularly punctured and striated. The lateral depression on the 2nd segment is wide, deep and is irregularly striated at the base. The suturiform articulation is wide, deep and is stoutly longitudinally striated; the apical lateral furrow is smooth. The transverse furrows on the 3rd and 4th segments are distinct, narrow and longitudinally striated. There are no apical transverse furrows.

This is probably the species recorded by Smith (Journ. Linn. Soc. 1857, 122) from Sarawak as *Bracon aculeator*, Fab.; but the present is different from the Indian species I have regarded as *aculeator*, Fab., *Sec. Brullé*. According to Brullé the latter has the basal 3 segments of the abdomen finely longitudinally striated and it has a transverse furrow on the base of the 5th segment.

In colouration this species is identical with *I. laertius* here described; but that species is easily known by the head being obliquely narrowed behind the eyes.

*Black, the wings fuscous, hyaline at the apex. Short broad species.*

*Iphiaulax trichiosoma* sp. nov.

Black, thickly covered with black hair, the head, scape of antennæ and the fore femora in front rufo-testaceous, the wings dark fuscous to the base of the stigma, beyond that milk white; the stigma from near the base pale testaceous, the radial and cubital nervures pale, almost white. ♀.

Length 7-8 mm., terebra 1 mm.

Hab. Kuching.

Scape of antennæ short, about twice longer than broad. Face sparsely punctured and covered with fuscous hair. The scutellar depression is rufous. Post-scutellum irregularly longitudinally closely striated and with a smooth keel in the centre which becomes wider at the apex. The 2nd to 5th segments are closely longitudinally striated, the striae intermixing all over; the basal plate on the 2nd segment is elongate, extends to the middle of the segment and becomes gradually narrowed; it is bordered laterally by 3 stout oblique keels. The 3 transverse furrows are wide, deep and longitudinally striated; the lateral furrows are wide and shallow; they are dark rufous in the centre. Legs thick y covered with black hair. The 1st and 2nd abscissæ are together not equal in length to the 3rd; the recurrent nervure is not quite interstitial, it being received at the apex of the 1st cubital cellule.

The eyes are distinctly margined; the ocellar region black; the temples are distinctly, roundly narrowed; the occiput is transverse; the abdomen is elongate-ovate, narrowed towards the base and apex.



*Iphiaulax Carnasius*, sp. nov.

Black, the head and median segment thickly covered with longish black pubescence; the wings, to the base of the stigma, black, with a violaceous tinge; beyond that milky-white; the apical two-thirds of the stigma pale yellowish-white; the apical nervures white; the abdomen ovate, much wider than the thorax; coarsely and closely rugosely punctured. ♀.

Length 7 mm., terebra 2 mm.

Hab. Kuching.

Antennæ longer than the body; the scape thickly covered with pubescence. Face irregularly punctured. Its centre slightly raised and smooth; the part over the oral incision raised above; its centre hollowed. Mandibles black; their basal half brownish below. Apical joints of the palpi fuscous. Thorax smooth and shining; the transverse furrow at the base of the scutellum shallow, straight and irregularly, stoutly crenulated. The apical abscissa of the radius is shortly, but distinctly, longer than the basal two united; the upper part of the 1st cubital cellule is hyaline. The basal segment of the abdomen is smooth and shining; the other segments are closely, rugosely punctured and more or less striated in the centre; the basal keel on the 2nd segment is smooth, shining, long and narrow; its keel is narrow and indistinct and extends to the apex of the segment, which is irregularly reticulated on either side of it; this part is obliquely bounded by a raised border: the lateral depression is, on the inner side, closely striated. The suturiform articulation is deep, clearly defined and longitudinally striated; the other furrows are less clearly defined. Legs stout, thickly covered with short, stiff black pubescence.

*Iphiaulax brunneomaculatus*, sp. nov.

Black: the greater part of the head and the fore part of the thorax more or less brownish; the wings to the base of the stigma dark fuscous, beyond that milky-white; the stigma, except at the base, and the apical nervures pale yellow. ♀.

Length 7; terebra  $1\frac{1}{2}$  mm.

Hab. Kuching.

Antennæ longer than the body, the flagellum brownish. Head shining; the vertex for the greater part black, the rest



brown; smooth. On the base of the median segment are two broad, shallow, slightly oblique furrows. Mandibles brownish-yellow, black at the apex. The apical part of the petiole is closely rugosely punctured; the 2nd segment is coarsely longitudinally punctured; the base of the keel is irregularly triangular, is shining and aciculated; the keel extends beyond the middle; the part bounding it is depressed and irregularly striated; the lateral furrows are broad, distinct and striated; the 2nd furrow is distinct and striated; the 3rd and 4th are narrower and less distinctly striated. The legs are more or less brownish and are thickly covered with black hair; the metatarsus is stouter than the other joints.

This species is very similar in form and colouration to *I. carnasius*; it may be easily separated from it by the rugosely punctured petiole and by the smooth and shining plate on the base of the 2nd segment, with its stronger keel.

*Chaoilta fuscipennis*, sp. nov.

Black, the head, thorax and 4 front legs ferruginous; antennæ black, the scape rufous; the abdomen, except the apical two segments, closely and distinctly punctured, its furrows striated. ♀.

Length 16 mm. terebra 17 mm.

Hab. Kuching.

Scape with a triangular hollow on the apex beneath; the corners projecting into short stout teeth. Front depressed, its centre furrowed. The frontal plate is large, becomes gradually narrowed towards the apex, which is rounded; the central keel is stout, does not reach to the apex and becomes gradually smaller. Antennal tubercles large, tuberculate on the outer side above. Thorax smooth and shining; the metanotum black to near the apex, where there are some irregular striæ in the centre. Legs thickly haired, the hinder tibiæ grooved on the outer side. The raised central part of the petiole is rugosely, longitudinally striated: the striæ are irregular and intermix; the depressed sides are longitudinally striated, more regularly and distinctly than in the centre. The 2nd 3rd and 4th segments are closely longitudinally striated; on the 4th the long-

itudinal striæ are mixed with transverse finger striæ. The sutures are closely striated. The area on the base of the 2nd segment is long and narrowed, extends to shortly beyond the middle and becomes drawn out into a fine point. The oblique depressions on the 3rd and 4th segments are shallow and not very distinct. The sheaths of the ovipositor are thickly covered with hair.

The toothed apex of the antennal scape is not so prominent as it is in the type (*C. lamellata*, Cam.) A characteristic of the genus is the long front tarsi which are more than twice the length of the tibiæ.

In Mr. Ashmead's generic synopsis of the genera of *Braconidæ* (U. S. Nat. Mus. Bull. xxiii, 137) no mention is made of the broad front plate, stress being laid on the toothed apex of the scape which is probably only of secondary importance. *Chaolta* Cam. (Manchr. Memoirs, 4th May, 1899, No. 3, p. 81) is identical with *Blastomorpha*, Szepligeti, Termesz, Fuzetek; xxiii, p. 50, 1900. To it also belong *Bracon intrudens*, Sm., from Celebes, *B. perplexus*, Sm., *B. inquietus*, Sm., from Borneo and *B. vulturosus*, Sm., from Singapore.

*Elphea*, gen. nov.

Abdomen long and narrow, almost cylindrical; the segments, except the apical, longer than broad, smooth without transverse furrows, the 2nd and 3rd segments separated like the others and without a suturiform articulation; the 2nd segment with a large shield-shaped plate on the base of the second segment. Hypopygium large cultriform. Antennæ long and stout, the scape large, globose. Temples large, roundly narrowed; occiput roundly incised. Eyes large, slightly incised on the inner side; the malar space of moderate length. Wings long and narrow; the transverse median nervure interstitial; the transverse basal is united to the cubital a short distance from the base of the latter, which issues from the costa and not from the transverse basal; the recurrent nervure is received at the apex of the 1st cubital cellule and is not interstitial; the anal nervure is received shortly below the middle. Fore tarsi about one-fourth longer than the tibiæ; the 1st joint of the tarsi not much longer than

the 2nd. Tegulæ large, projecting. Hind wings as in *Bracon*. Radius reaching to the apex of the wing. Thorax longish and narrow.

A genus of *Braconinae* easily known by the long narrow body; the long abdomen without transverse furrows or suturiform articulation, large conchiform tegulæ, short thick scape. The metathoracic spiracles large and placed behind the middle. Tarsi spined. It comes near to *Campsobracon*.

*Elphea lutea*, sp. nov.

Luteous: the front, vertex, occiput and half of the outer orbits and the 5th and 6th abdominal segments on the back, black; the wings yellowish-hyaline; a broad cloud at base of the stigma extending to the opposite side, a shorter one at its apex extending only to the cubitus; a broader one on the apex commencing near the 2nd transverse cubital nervure and the apex of the hinder wings with 2 clouds behind, smoky; the stigma and nervures yellow. Abdomen long and narrow: smooth; the suturiform articulation crenulated; there are no other furrows. ♀.

Length 13; terebra 20 mm.

Hab. Kuching.

Antennæ as long as the body, black, brownish beneath towards the apex. Head smooth, shining and impunctate; the ocelli bordered by furrows: the face with a distinct, deep furrow down the centre; there is a furrow on the lower part of the front which becomes gradually wider towards the apex. The face has a distinct yellow tint. The 1st cloud in the wings is irregularly rounded behind, is narrowed above, behind it follows the transverse basal and transverse median nervures, at the apex the recurrent nervure; the 2nd is of almost equal width: the apical cloud commences near the 2nd transverse cubital nervure and below extends backwards to nearly opposite the lower part of the 1st transverse cubital. The raised area on the 2nd segment is large, extends to the middle of the segment, becomes gradually narrowed to the apex, with the sides rounded, not straight; its sides are depressed; at the apex is a depression which has a keel in the middle.

*Elphea flavomaculata*, sp. nov.

Black, smooth, and shining; the face, except for a narrow black line in its centre above, and a large black mark on its lower half below, a mark on the hinder edge of the pronotum, broadest behind the tegulæ, a broad curved mark below them, a mark under the hind wings, the apices of the abdominal segments and the greater part of the ventral surface, pallid yellow, as are also the 4 front legs, except for a black line on the tibiæ; the hinder legs black, the base of their tibiæ testaceous. wings hyaline, with a fulvous tinge; the lower part of the apex of the anterior and the whole of the apex of the posterior smoky; the stigma dark fuscous in front, pale yellow behind; the nervures fuscous. ♀.

Length 14 mm., terebra 8 mm.

Hab. Kuching.

Antennæ black, short, longer than the body. Median segment sparsely covered with long fuscous hair, its apex all round and a large mark on the pleuræ are testaceous. Abdomen smooth and shining: the base and sides sparsely haired.

*Plesiobracon*, gen. nov.

Median segment with a keel down the centre. Temples sharply obliquely narrowed, the occiput transverse. Malar space large. Transverse median nervure interstitial; the recurrent nervure widely distant from the transverse cubital. Abdomen as in *Iphiaulax*, with distinct transverse crenulated furrows; the 4th segment produced in the middle above.

The cubitus originates from below the upper part of the transverse basal; the stigma is large; the hypopygium is large, cultriform; the antennæ are long; the mandibles are broad at the base, curved and end in a sharply-pointed tooth.

This genus is allied to *Iphiaulax* by the form of the abdomen but is readily separated from it by the recurrent nervure not being interstitial, by the stout keel on the metanotum and by the temples being sharply obliquely narrowed behind the eyes.

*Plesiobracon carinata*, sp. nov.

Black, the face, oral region, the inner, outer and the lower outer eye orbits narrow; the malar space and mandibles rufo-



testaceous; the palpi white; the wings hyaline; the lower part of the clypeus and the nervures testaceous; the back of the five basal segments of the abdomen, striated longitudinally and closely.

Length 5-6; terebra 7 mm.

Hab. Kuching.

Antennæ longer than the body; the scape and basal joint of the flagellum black, bare and shining; the other joints brownish black. Face aciculated, almost shining; the clypeus impunctate, shining. Apex of mandibles black. Thorax covered with longish white pubescence. Legs covered with white pubescence, the front pair testaceous, the middle tarsi dark testaceous. The 1st and 2nd abscissæ of the radius are together shorter than the 3rd. Post-petiole rugosely punctured; the base smooth, its sides striated; its middle with a smooth furrow which projects into the punctured apical part. The basal plate on the base of the second segment is longer than broad, narrowed towards and longitudinally striated; the keel is narrow; the suturiform articulation and the furrow on the 3rd and 4th segments are striated closely; the 4th dorsal segment projects bluntly in the centre; the 3rd and following segments are narrowly edged with whitish-yellow on the apex.

*Sigalphogastra*, gen. nov.

Abdomen with 5 segments, the 3 middle ones broader than long, the basal and apical longer in proportion to the breadth; all the segments longitudinally striated; the last broadly rounded at the apex; the apical 3 with transverse crenulated furrows on the base. Median segment with a stout keel in the centre at the base and two curved narrower, sharper keels on the apical half. Temples broad, slightly roundly narrowed. Malar space large. Wings as in *Bracon*. Legs rather slender, the tibiæ and tarsi densely pilose.

This genus possesses all the characteristics of the *Braconini* except as regards the marked difference in the form of the abdomen. In the *Braconini* there are 7 segments which become gradually smaller; in the present genus there are only 5 large segments of almost equal size. The form of the abdomen reminds one of the *Cheloninae*, but that group does not belong to



the *Cyclostomi*. In our genus the mesonotal furrows are complete: there is a crenulated furrow at the base of the scutellum which is moderately convex; there is a distinct curved furrow at the base of the median segment; the scape of the antennæ is long and slender, the pedicle is of equal width, broader a little than long and transverse at the apex; the first 3 joints of the flagellum are long, fully 3 times longer than wide and of equal length.

This genus clearly comes close to *Chelonogastra*, Ashmead (Bull. U. S. Mus. xxiii, 139) from Japan. It may be known from our genus by the abdominal segments being unequal in length; the 1st and 2nd occupy most of the surface, the 4th and 5th being very short; the first three joints of flagellum are scarcely longer than thick, etc.

*Sigalphogastra Ashmeadi*, sp. nov.

Head and thorax ferruginous, the antennæ, abdomen and hinder legs black; the fore legs rufous; the middle dark testaceous; the head and thorax smooth and shining, the metanotum with a few irregular keels in the centre; the back of the abdomen strongly, irregularly longitudinally striolated; the wings hyaline, the nervures black; the stigma fuscous below. ♂?

Length 7 mm.

Hab. Kuching.

Sides of the face sparsely punctured; the centre raised, clearly separated and smooth; it is separated from the clypeus. Tips of mandibles black; the palpi pale rufous. Front flat in the centre, bordered laterally from near the top by a blunt, stout keel which runs into the antennal scape. The centre of the petiole is raised, clearly limited; its sides raised, broad at the base, its apex narrowed; there is an irregular row of oblique keels on the sides. The area on the 2nd segment is large, broad at the base, becoming gradually narrowed to the apex; it is finely irregularly longitudinally striated, the rest more strongly transversely striated; there is an oblique keel outside this; the part on either side of this is stoutly obliquely striated; the last segment is more closely and regularly striated than the others.

## RHOGADINÆ.

*Dedanima*, gen. nov.

Occiput, cheeks and temples margined. Temples broad. Fore wings with 3 cubital cellules; the recurrent nervure in fore wings interstitial; the transverse pobrachial received in the discoidal cellule. Radial nervure in hind wings reaching to the apex of the wings; the pobrachial nervure in it placed half way between the lower part of the præbrachial and the base of the wing; stout. Eyes large, distinctly incised on the inner side. Parapsidal furrows deep; the middle lobe of the mesonotum raised. Abdomen sessile; the basal segment longer than the 2nd, which is as long as the 3rd and 4th united; the 3rd 4th and 5th segments are equal in length and width. The suturiform articulation is distinct throughout, wide, deep. The basal 4 segments are closely punctured and obscurely striated; the apical segments are bluntly pointed; the ovipositor not projecting. There is a deep curved furrow on the lower side of the mesopleuræ in the centre. The radius originates behind the middle of the stigma; the 2nd transverse cubital nervure is faint. The hinder coxæ are elongate; they are slightly longer than the trochanters which are long, slender and curved. The spurs are short. The hypopygium is large. The 1st abscissa one-third of the length of the 2nd.

If it were not for the absence of keels on the basal abdominal segments I should have felt inclined to have placed this genus with the *Rhogadini*. The only other group in which it can be placed is the *Rhyssalini*. Characteristic is the well-marked furrow on the mesopleuræ.

*Dedanima longicornis*, sp. nov.

Luteous, covered with a pale pubescence; the ocelli and the antennæ black; the wings hyaline, the stigma and nervures black; the basal 4 segments of the abdomen closely longitudinally striated. ♀.

Length 7 mm.

Hab. Kuching.

Antennæ longer than the body, densely covered with a fuscous pile. Parapsidal furrows deep; the middle lobe of the mesonotum raised and clearly separated. Propleuræ depressed and punctured in the centre. Mesopleural furrow, curved, deep, lightly widened and rounded at the apex; it occupies the central part of the pleuræ. The striation on the abdomen is strongest on the 2nd segment, whose sides are tuberculate near the base. The sheaths of the ovipositor are black and short.

*Halycæa*, gen. nov.

Antennæ longer than the body, filiform. The joints of the flagellum not clearly separated. Head cubital, rounded in front transverse behind, the occiput margined; the malar space large almost as long as the length of the eyes. Palpi long and filiform. Mesonotum flat; the middle lobe separated, broadly furrowed down the middle; between its apex and the base of the scutellum is a broad, shallow depression, which is irregularly longitudinally striated. Scutellum flat throughout. Median segment closely reticulated, long, flat above and with a short apical slope. Legs long; the front tarsi more than twice the length of their tibiæ. Wings with 3 cubital cellules: the 2nd longer than the 1st and shorter than the 3rd. In the hind wings the pabrachial transverse nervure is interstitial with the præbrachial. The costal areolet is much longer than the radial; the pabrachial nervure is obsolete. The transverse median nervure in the fore wings is not interstitial being received shortly beyond the transverse basal. Abdominal petiole long, longer than the 2nd and 3rd segments united; it is of uniform thickness throughout and is nearly as wide as the 2nd segment. The 2nd segment bears 2 narrow furrows which extend from the base to the apex; the suturiform articulation especially at the sides, and is slightly curved. The ovipositor is long. The anal nervure in the hind wings is interstitial. The hinder coxæ are not produced in front.

This genus does not fit very well into any of the tribes of the *Cyclostomi* but may, for the present, be referred to the *Doryctides*. Its characteristic features are the long filiform antennæ, margined occiput, flat scutellum, depressed mesonotum, longish reticulated median segment, long petiole of equal

width and long slender anterior tarsi whose basal joint is nearly as long as the tibiae.

*Halycæa erythrocephala* sp. nov.

Black, the head rufous, the long palpi, the base of the 4 hinder tibiae and the 4 hinder tarsi white; the wings hyaline, distinctly tinted with fuscous of a violaceous tinge, the stigma and nervures black. ♀.

Length 15 mm., terebra 18 mm.

Hab. Kuching, 25th March.

Face closely rugosely punctured and covered sparsely with long fuscous hair; the space between the keels deep; the apex bears some stout longitudinal keels. The upper part of the meso-stoutly irregularly striated at the base; the lower furrow is wide and deep and is stoutly striated, the metapleuræ are more stoutly reticulated than the base, with its base almost smooth. The basal segment of the abdomen is closely and rather strongly rugosely punctured; the punctures run into reticulations in the centre and become finer towards the apex; its base is depressed. The triangular area on the second segment is closely, finely rugosely punctured; there is a smooth line down the centre of the face with a furrow in its middle. The furrow on the base of the mesonotum is wide and smooth: the depression behind it is bordered laterally by 2 irregular keels and there is also a curved keel on the inner side at the base; the space between the 2 keels and outside them are irregularly crenulated. Scutellum depressed in the centre, finely punctured, depressed and rufous in the centre; at its base are 4 short keels. Post scutellum depressed in the centre; its sides broad. Propleuræ stoutly keeled in the centre at the base, the rest is much more finely and closely punctured; the bordering furrows are deep and rufous. The 3rd and 4th segments are alutaceous, opaque; the others smooth and shining. The apices of the tarsal joints are spinose.

MACROCENTRINÆ.

*Zelee filicornis*, sp. nov.

Luteous, smooth and shining; the antennæ almost twice the length of the body; very slender, black, the scape rufous: the

flagellum covered with a microscopic pile; the wings clear hyaline; the nervures and stigma black; ocelli large, and in a black patch; the parapsidal furrows striated on the apical half; the metanotum shagreened and obscurely transversely striated. ♀.

Length 9 mm.

Hab. Kuching.

There is a distinct keel on the metapleuræ above the middle; a roundly curved one on the apex of the metanotum; the hinder tibiæ are long, compressed and reach near to the apex of the petiole; it is distinctly narrowed at the base behind the spiracles, which project; it is as long as the 2nd and 3rd joints united. The marginal cellule is not divided, in the hind wings, by a transverse nervure.

#### AGATHIDINÆ.

##### *Balcemena*, gen. nov.

Areolet narrowed at the top, the nervures, however, not touching. Second transverse cubital nervure without a process. Radial cellule long and narrow. First cubital and first discoidal cellules not separated. Front not much depressed and without keels; there are two short keels between the antennæ. Central lobe of mesonotum raised; the parapsidal furrows indistinct. Apex of scutellum with a stout transverse keel. The base of the median segment obliquely depressed; there are two longitudinal keels which form a closed longitudinal narrow area in the centre, these being the only keels on it. All the claws are bifid. The ovipositor is short; its sheaths broad. The antennæ are longer than the body and taper towards the apex; the basal joints of the flagellum are equal in length. The apical three joints of the maxillary palpi are not lenticular or compressed and are not much shorter than the basal.

May be known by the long, narrow wings, with the long cubital and radial cellules in both wings, by the very short ovipositor which hardly projects, by the single central area on the median segment, by the short, raised, distinctly separated middle lobe of the mesonotum, which does not reach to the middle, and by the long antennæ and hind legs.



*Balcmena longicollis*, sp. nov.

Black, smooth and shining; the head, pro- and mesothorax ferruginous; the antennæ longer than the body, black, the scape rufous below; the wings long, ample, uniformly dark fuscous, with a violaceous tinge; the nervures and stigma black; there are two small hyaline spots below the base of the stigma. ♀.

Length 14 mm.

Hab. Kuching.

The antennæ taper towards the apex; almost bare. Face and clypeus thickly covered with fuscous pubescence. Teeth of mandibles black. Prothorax elongate; the middle lobe of the mesonotum roundly raised and separated from the lateral, which are flat. Scutellum sparsely haired; its apex bounded above by a flat plate with rounded sides. Post-scutellum deeply depressed and bordered by stout keels; behind its centre is a stout longitudinal keel. Median segment thickly covered with black pubescence. There is a narrow oblique furrow below the tegulæ; the large oblique depression on the apex of the mesopleuræ below is stoutly crenulated. Legs, with the calcaria, thickly covered with short black hair. The ventral surface of the abdomen is white at the base; the sheath of the ovipositor is black, and is covered with black hair.

*Troticus melamopterus*, sp. nov.

Head below the eyes and the pro- and mesothorax rufous; the four front legs of a paler rufous colour; the wings dark fuscous, the base of the 1st cubital cellule and a small narrow cloud below it, hyaline; the antennæ black, thickly covered with stiff black pubescence. ♀.

Length 8 mm.

Hab. Kuching.

Face and clypeus distinctly punctured and thickly covered with fuscous pubescence. Mesonotum rufo-fuscous. The central area on the metanotum is coarsely transversely striated, extends from the base to the apex and is slightly narrowed at the base; there are two lateral areas; a large basal one extending beyond the middle, coarsely aciculated on the outer side at the base and with two or three stout transverse keels near the centre, the lower

one being roundly and deeply curved and is united to a curved outer keel which extends to the apex of the segment; the apical area has a short upper and a longer curved lower keel; below the spiracles are 3 stout irregular keels. Abdomen smooth and shining; the 2nd segment is slightly depressed on the sides at the base.

*Disophrys fuscicornis*, sp. nov.

Black: the head, prothorax and mesonotum rufous; the front tibiae and tarsi rufo-testaceous; the wings dark fuscous to the 2nd cubital cellule, beyond that, milk-white; the base of the stigma broadly black; the rest pale rufo-testaceous. ♀.

Length 9 mm.; terebra 7 mm.

Hab. Kuching.

Cheeks and clypeus thickly covered with long white pubescence; the front, vertex and occiput black. Scape of antennae dark rufous beneath; the base of the flagellum broadly dark brown. Scutellar fovea large, deep and with four stout keels. The central area on the metanotum is obliquely narrowed at the base and apex; there are three stout transverse keels between the middle and the apex of the narrowed upper part; the upper area next to it is broader than long; the lower two are large, of nearly equal size and longer than broad; the spiracular area is large, 3-angled on the inner side, rounded and irregular on the outer, the area next to it is rounded and narrowed above, straight and oblique below. On the centre of the metapleuræ are two irregularly curved keels with some oblique keels between them. Abdomen smooth and shining; the 2nd segment is broadly depressed laterally; the suturiform articulation is broad and smooth.

ICHNEUMONIDÆ.

OPHIONINI.

*Aglaophion*, gen. nov.

Fore wings without dark coloured blisters; the transverse median nervure in hind wings broken shortly above the middle. Apex of clypeus broadly rounded. Ocelli not large, distinctly separated from each other and from the eyes, which are moder-

ately large and are distinctly separated from the base of the mandibles; they are slightly emarginate on the inner side.

Claws pectinated. Disco-cubital nervure originating distinctly before the discoidal nervure. Scutellum large, longer than broad, distinctly raised and separated. The median and submedian cellules in front wings equal in length; there is no stump of a nervure on the disco-cubital nervure. Meta-thorax stoutly longitudinally and transversely striated. Ovipositor short.

In Ashmead's arrangement (Bull. U. S. Nat. Mus. xxiii, 86) this genus would come nearest to the American *Thyreodon*, which may be known from it by the apex of the clypeus being sub-angularly pointed, not broadly rounded, by the transverse median nervure in the hind wings being broken near the top and by the disco-cubital nervure being broadly rounded, not sharply angled in the middle as in the present genus. The transverse median nervure is received very shortly behind the transverse basal, almost interstitial with it. The apex of the 3rd abdominal segment, on the back, is roundly narrowed towards the base and is incised in the centre above.

*Aglaophion flavinervis*, sp. nov.

Black, with a metallic blue tinge, the face, clypeus, the lower half of the outer orbits, the malar space, the outer edge of the mesonotum at the base, the scutellum, post-scutellum, the centre of the median segment at the base, its apical half, the lower edge of the pronotum, the base and lower edge of the mesopleuræ and the greater part of the metapleuræ, rufo-testaceous; the four anterior legs of a paler, more yellowish testaceous colour; the hinder legs black, their femora with a bluish tinge. Wings yellowish-hyaline, the nervures yellow; their apex smoky. ♀

Length 22 mm.

Hab. Matang, 3,200 feet.

Antennæ as long as the abdomen, stout, tapering towards the apex, black, covered with a microscopic down. Face closely, distinctly and uniformly punctured; the clypeus more strongly and sparsely punctured in the middle; the foveæ large, black. Mandibular teeth black, the centre punctured. Palpi dark

testaceous. Front and centre of vertex smooth and shining; the sides of the latter closely punctured; the vertex widely and deeply furrowed in the centre. Mesonotum closely and minutely punctured; the scutellum rugosely punctured. Base of median segment with two stout wrinkled keels down the centre; the sides stoutly, irregularly transversely striated; the apical slope is stoutly, irregularly longitudinally striated; the striae are curved. Pro- and mesopleurae smooth; the former obliquely striated below; the meta- coarsely reticulated except on the obliquely depressed base, there is a longish black mark on the base, which becomes obliquely, gradually wider towards the apex, on the apex above there is a large, oblique, somewhat square, black mark. Abdomen smooth and shining; the sides and lower side of the petiole testaceous.

*Enicospilus nigronotatus*, sp. nov.

Dark luteous; the mesonotum, the base of the scutellum, the breast and the third and following segments of the abdomen black, the face and the eye orbits narrowly pallid yellow; the wings hyaline, the nervures and stigma black; the disco-cubital cellule with a small round and a narrow curved longish horny point. ♀.

Length 30 mm.

Hab. Kuching.

Face slightly blistered in the centre, the sides minutely punctured; the clypeus smooth. Mesonotum smooth and shining. Scutellum obscurely punctured at the base, the rest minutely, irregularly longitudinally striated. Median segment at the base behind the keel smooth; the rest in the centre stoutly, longitudinally striated; the striae being curved; laterally it is stoutly obliquely striated and irregularly reticulated. Pro- and mesopleurae smooth; the lower half of the latter finely and closely longitudinally striated. The basal half of the meta-pleurae bears some curved narrow striae; the rest is stoutly obliquely striated. Abdomen smooth and shining; the apical segments covered with a white down; the sheath of the ovipositor black. Tibiae and tarsi thickly covered with short stiff fulvous pubescence.

## PIMPLINI.

*Rhyssa maculipennis*, Sm.

This fine species has been taken at Kuching by Mr. Shelford. It varies in size from 20 to 27 mm. and the yellow markings on the thorax vary in size and number, as does also the amount of black on the legs.

*Epirhyssa nigrobalteata*, sp. nov.

Luteous; the vertex, occiput, the front broadly in the middle except for a square mark in the centre. The mesonotum, except for a squarish mark in the centre, the apical slope of the scutellum, a curved line on the apex of the median segment, the propleuræ broadly in the middle, the base of the mesosternum, an oblique mark on the lower side of the mesopleuræ at the base, the base and lower side of the metapleuræ and the base and apices of the abdominal segments, black. Legs coloured like the body; a line on the femora above, the knees, the apical joint of the four front tarsi; the apices of the other joints of the apex of the hinder tibiae and the whole of the hinder tarsi, black. Wings hyaline, with a faint cloud in the apex of the radial cellule; the stigma and nervures black. ♀.

Length 17; terebra 17 mm.

Hab. Kuching.

Antennae black, fuscous underneath. Face punctured, transversely in the centre. Mandibles black. The basal slope of the middle lobe of the mesonotum is smooth and has a plumbeous hue; so also is the apical slope which is oblique. Scutellum closely transversely striated in the middle. The middle segments of the abdomen are punctured and finely transversely striated in the middle. The black basal band on the 2nd and 3rd segments are incised in the middle, on the others it becomes prolonged down the middle, the prolongation becoming gradually longer, until on the penultimate segment it extends to the apex; on this segment it is of equal width throughout; the last segment is entirely black. The recurrent nervure in the fore wings is interstitial.

To *Epirhyssa* clearly belongs *Macrogaster flavopictus* Sm. (Proc. Linn. Soc. 1857, 121) from Singapore.



*Epirhyssa bimaculata*, sp. nov.

Luteous: the vertex and front broadly, the occiput, the mesonotum, except for two small lines in the centre, the apex of the scutellum and post scutellum, a mark on the lower side of the propleuræ, the sides and apex of the 2nd segment and the others, except for a transverse band near the apex, black. The femora more or less brownish above; the base of the 4 posterior tibiæ and the apex of the hinder tibiæ, the apices of the fore and hinder tarsi and the middle entirely, black. Wings hyaline, with a fulvous tinge, the stigma testaceous, the nervures darker. ♀

Length 12 mm. terebra 13 mm.

Hab. Kuching.

Mandibles black. Face closely transversely punctured. The basal lobe of the mesonotum is more strongly transversely striated than the others and is widely depressed at the base. The scutellum is not distinctly transversely striated. Pleuræ smooth. The recurrent nervure is not quite interstitial, being received very shortly beyond the transverse cubital, which is longer than usual; the transverse median nervure is received shortly beyond the transverse median. The basal segment of the abdomen is short and broad and of uniform breadth.

*Echthromorpha laeva*, sp. nov.

Black, smooth and shining: the face, clypeus, mandibles, palpi, outer orbits, the inner more narrowly, two lines on the mesonotum, dilated at the base, scutellum, post-scutellum, the median segment except for a broad band in the centre, the base of the propleuræ, the tubercles, the mesopleuræ broadly and the apices of all the abdominal segments, pale yellow. Wings hyaline, the stigma testaceous, the apical cloud extends half way into the cubital cellule. Antennæ black, the scape yellow, the base of the flagellum brownish beneath. ♂

Length 12 mm.

Hab. Singapore.

Antennæ longer than the body; the middle and apical joints are dilated at the base and apex and are covered with short stiff pubescence; the apical joint is flattened and is distinctly

longer than the preceding. The front is raised in the middle; the raised part has oblique sides. Parapsidal furrows obsolete. Scutellum roundly convex, distinctly raised above the mesonotum; its sides are not margined. The transverse furrows on segments 2 to 5 of the abdomen are distinct and smooth. There is a black mark on the apex of the hinder coxæ above; the hinder coxæ are broadly lined with black above on both sides and below; the hinder tibiæ are black at the base; the hinder tarsi black. The black line on the metanotum has the basal half dilated.

Comes near to *E. ornatipes*, Cam., which may be known by the punctured thorax and abdomen, etc.

*Trichiothecus*, gen. nov.

Wings uniformly dark fuscous; the areolet oblique, the apical abscissa twice the length of the basal, shortly, but distinctly appendiculated; the recurrent nervure is received near the apex. Clypeus not separated from the face; its apex depressed and roundly emarginated. Transverse median nervure in hind wings broken shortly below the middle. Abdominal segments closely rugosely punctured; segments 2 to 5 with rounded furrows at base and apex. Claws large, simple. Metathorax smooth without keels.

Eyes large, the malar space moderate; the temples are also moderate and are obliquely narrowed; the occiput roundly incised, above obliquely narrowed. Antennæ moderately stout, as long as the abdomen; its last joint is distinctly shorter than the preceding two united. Eyes entire, diverging very slightly above. Metatarsus nearly as long as the other joints united. Ovipositor long.

A genus easily known by the incised apex of clypeus, by the black wings with the appendiculated irregular areolet and by the peculiar colouration. It comes near to *Erythropimpla*, Ashm., and *Charitopimpla*, Cam. The latter may be known from it by the clypeus being separated from the face by a transverse furrow, by the areolet being small, triangular, not appendiculated or oblique, by the hyaline wings, and the abdominal segments are wider than long, not longer than wide. There are two bullæ on the 2nd transverse cubital and two on the recurrent nervure.

To this genus probably belongs *Pimpla viridipennis*, Sm. from Celebes. It has the same general colouration as our species, but with the hinder femora red; the median segment being also red.

*Trichiotheus ruficeps*, sp. nov.

Black; the head pro- and mesothorax and the 4 anterior legs ferruginous: the wings uniformly fucous-violaceous. ♀.

Length 18 mm. terebra 15 mm.

Hab. Kuching.

Antennæ black, the scape rufous. Head smooth and shining; the face sparsely covered with black pubescence; the clypeus with longer hair. Mandibles ferruginous, their teeth black. Metanotum covered with black pubescence, its base rufous. Petiole smooth and shining; its centre broadly raised in the centre which bears some large scattered punctures. The 2nd to 5th segments are closely and somewhat strongly punctured, except on their apices; the depressions have a stout keel in the middle. Tibiæ and tarsi thickly covered with stiff black pubescence. Sheath of the ovipositor thickly covered with short, stiff black pubescence.

*Xanthopimpla latebanteata*, sp. nov.

Rufous-yellow; the vertex, the front broadly in the middle, the upper part of the vertex to the middle, the mesonotum except at the base, the base of the metanotum to shortly below the middle of the areola and broad transverse bands on all the abdominal segments—occupying more than the basal half of the segments and the whole of the apical one—black. Wings hyaline, the apex slightly infuscated. Areola large, longer than wide. Legs immaculate. Antennæ black, brownish beneath; the scape yellow beneath. ♂.

Length 14 mm.

Hab. Kuching.

Face distinctly punctured, thickly covered with white pubescence. The basal central part of the mesonotum is more distinctly raised than usual; the furrows do not extend beyond the basal third. Scutellum and post-scutellum stoutly keeled laterally. Areola distinctly longer than wide, the basal two thirds obliquely narrow; the lateral keel is received shortly, but clearly, beyond its middle; the apex is transverse. The

tooth-bearing area is 4-angled, and is narrowed on the inner side.

Would come into Krieger's section G, if it were not for the black mark on the occiput.

*Xanthopimpla nigratarsis*, sp. nov.

Yellow, a triangular mark enclosing the ocelli, a broad band on the mesonotum, trilobate at the apex, between the base of the tegulae and the base of the mesonotum; its apex and the scutellum on the lower part of the basal slope, a line of almost equal width throughout on the base of the metanotum; a large mark on the 1st and apical two segments and two large broad marks on the others, black. A line on the under side of the hinder femora, their apex narrowly, the base of the hinder tibiae and the four hinder tarsi, black. Wings hyaline, their apex slightly infuscated, the stigma and nervures black. ♂.

Length 12 mm.

Hab. Kuching.

Face and base of clypeus closely, but not strongly, punctured. The 3 lobes of the black line on the mesonotum are rounded. The parapsidal furrows are deep at the base and extend near to the middle. The scutellar keels are narrow, leaf-like and become narrowed towards the apex. The areola is large, 6-angled; the base obliquely narrowed, the apex transverse; the tooth-bearing area is 4-angled, transverse of equal width and is not much smaller than the area at its base. The basal abdominal segment smooth, its keels stout; the other segments are closely and distinctly punctured, with their furrows striated. The black mark on the 1st segment is large, incised at the base and apex in the centre; the basal incision is small, the apical larger and wider and with oblique sides. The ten intermediate marks are large and wider than long; the 1st and last pair are smaller than the others.

Belongs to Krieger's section G. *l. c.* p. 92.

*Xanthopimpla maculifrons*, sp. nov.

Luteous: the ocellar region, the occiput in the middle, the middle of the front, the mesonotum, except for a large squarish mark in the middle, close to the apex, the base of the meso-

notum—the mark narrowed in the middle—a large mark on the 1st and on the apical two segments and two large marks, broader than long, on all the others, a mark on all the tibiae at the base, a large mark on the hinder coxae, one on the outer and inner side of the hinder trochanters, a large line on the outer and inner side of the hinder femora and on the base of the last joint of the four hinder tarsi, black. Wings hyaline, the apex with a distinct smoky cloud. Areola large, 6-angled, of almost equal width at base and apex and projecting angularly in the middle. Ovipositor shorter than the hinder tibiae. ♀.

Length 14 mm.; terebra nearly 3 mm.

Hab. Kuching.

Antennae black: the scape yellow below: the base of the flagellum beneath and the apical joints brownish. Face closely punctured and thickly covered with white pubescence. The parapsidal furrows are deep and distinct only on the basal third of the mesonotum. The scutellum is distinctly keeled on the sides, not so sharply behind; the post-scutellum is distinctly keeled laterally. The tooth-bearing area is large and is of equal width. The black on the areola does not reach to its middle, on the sides it extends near to the middle of the tooth-bearing area. The keel on the metapleuræ does not reach the base. The middle segments of the abdomen are closely punctured.

Comes into Krieger's Section E, l. c. p. 81.

*Xanthopimpla brunneiornis*, sp. nov.

Luteous, the ocellar region, three roundish marks on the base of the mesonotum, the central being broader than long, the lateral longer than broad, two marks on the 1st, 2nd, 3rd, 4th and 6th abdominal segments and a mark on the base of the hinder tibiae, black: the wings hyaline, the nervures and stigma black; the areola is wider than long and gets gradually wider towards the apex; the spiracular area is triangular; the ovipositor is longer than the hinder tibiae. ♀.

Length 12 mm. ovipositor 4 mm.

Face, clypeus and labrum closely and finely punctured, the face more strongly than the clypeus and it is thickly covered with pale pubescence. Thorax smooth and shining; the parapsidal



furrows do not reach to the centre of the mesonotum. The areola is 4-angled; it becomes gradually, but not much, widened towards the apex, which is transverse; it is moderately large, is wider than long and is transverse at the apex; the tooth-bearing area is longish, oblique, triangular, the keels uniting on the inner side. The keel on the metapleuræ is narrowed at the base. Abdomen smooth at the base and apex; the 2nd and 3rd segments are closely, but not strongly punctured; the apical transverse furrows are longitudinally striated. The marks on the 3rd segment are larger and more oval than the others; on the 4th they are smaller; on the 5th they are longer and broader, the last pair are oval. The antennæ are brownish-red below; the scape largely black above.

Comes near to *X. ruficornis*, Krieger.

*Pæcilopimpla*, gen. nov.

Abdominal segments smooth, impunctate, broader than long, without transverse or oblique depressions; the petiole broad, scarcely narrowed at the base. Scutellum roundly convex: its basal slope only keeled. Median segment with three large areæ on the base. Temples moderately large, roundly narrowed. Occiput rounded inwardly, margined. Vertex obliquely, roundly depressed. Eyes emarginate on the inner side, large, reaching near to the base of the mandibles. Clypeus short, separated from the face, depressed obliquely below and with the apex distinctly margined. Labrum not projecting. Mandibular teeth large and of equal size. Parapsidal furrows only indicated at the base. Areolet small, oblique, 5-angled, narrowed above. Transverse median nervure not interstitial, being received shortly beyond the transverse basal. The transverse median nervure in hind wings broken shortly above the middle. Legs stout; the claws long, simple. The apical abdominal segment is broad, not narrowed as usual, at the apex; it is furrowed down the middle, this being also the case with the 2nd segment.

The antennæ are stout, as long as the body and hardly taper towards the apex. The apical abscissa of the radius is not curved upwards; there is a short stump of a nervure on the cubito-disco nervure.

Comes near to *Xanthopimpla* which may be known from it by the orbits being straight and oblique, not rounded, by the occiput being transverse, not roundly incised, by the abdomen being distinctly punctured and marked with transverse furrows and by the scutellum being keeled along the sides. The middle vein in the hind wings is, like the others, distinct to the apex.

*Pæcilopimpla lucida*, sp. nov.

Luteous, the ocellar region, the vertex broadly behind them, three broad marks on the mesonotum, occupying almost all the lobes, a small central and a larger mark on either side on the base of the metanotum, all three rounded at the apex, the base of the propleuræ, the abdominal segments broadly, the base and apex of the four hinder femora and tibiæ and the hinder tarsi, black. Wings hyaline, the nervures and stigma black. Antennæ black, the scape yellow, the flagellum brownish beneath. ♂.

Length 10 mm.

Hab. Kuching.

Face closely punctured, roundly concave, keeled in the middle. Parapsidal furrows distinct at the base only. Median segment smooth and shining, the areola square, the tooth bearing area confluent with that at the base. Abdomen smooth and shining; the 2nd segment is deeply furrowed in the middle at the base; its oblique lateral furrows are smooth.

XORIDINI.

*Cyanoxorides*, gen. nov.

Antennæ stout, densely covered with short stiff pubescence: the 3rd joint hardly longer than the 4th, the apex from the 20th joint geniculated, bent back and separated from the rest like the lash of a whip. Clypeus short, broad, clearly separated from the face, depressed; its apex transverse. There is a stout keel between the antennæ. Occiput not very distinctly margined. Mandibles edentate, broad at the base, becoming gradually narrowed towards the apex. Mesonotum trilobate. Median segment areolated; the central area extends from the base to the apex and has the apical half much wider than the basal. Spiracles linear. The apical half of the mesosternum separated from

the pleuræ by a curved furrow. Areolet in fore wings absent; the transverse cubital nervure is short, the recurrent nervure is received shortly beyond it; the transverse median very shortly behind the transverse basal, almost interstitial. In the hind wings the cubital nervure is broken below the middle. The basal segment of the abdomen is large, becoming gradually wider from the base to the apex; the spiracles are placed shortly behind the middle; the basal three segments bear curved or oblique depressions; the last segment is larger than the preceding and bears distinct cerci; the hypopygium is smooth; the ovipositor is not quite so long as the body.

The prothorax is long, the tegulæ being placed not far from the middle of the thorax; the sides, at the base, project into teeth; there is an oblique keel near the base of the propleuræ; the ocelli are widely separated from the edge of the vertex; the tarsi are short, compared with the tibiæ; the basal joint of the hinder is slightly longer than the others united; the four front tibiæ are sharply contracted at the base, as is also the case, but to a less extent, with the posterior; the claws are smooth and simple. The temples are large and there is a distinct malar space.

To this genus probably belong *Glypta fracticornis*, Sm., from Mysol and *Xylonomus fracticornis*, Sm., from Batchian.

*Cyanoxorides Brookei*, sp. nov.

Metallic blue, thickly covered with white pubescence, the antennæ black with a white band beyond the middle; the wings hyaline, the nervures and stigma black; there is a narrow fuscous cloud bordering the transverse basal and the transverse median nervures behind; and a broader cloud on the basal half of the radial cellule, extending along the inner side of the recurrent nervure to the opposite side of the wing. ♀.

Length 16 mm.; terebra 11 mm.

Hab. Kuching.

Front and vertex smooth and shining, with a few scattered punctures; the outer edge of the vertex and the temples thickly covered with white hair. Face closely punctured, its upper part finely transversely striated and covered with white pubescence; the clypeus impunctate; the labrum fuscous, smooth, with a row of long hairs on the middle and apex. Mandibles

black. Apical half of the middle lobe of the mesonotum coarsely transversely reticulated, its apex stoutly longitudinally striated; the basal half is sparsely punctured. Scutellum sparsely punctured laterally; the post-scutellum is furrowed on the inner side of the lateral keels. The metapleuræ at the base are sparsely punctured; the rest of them on the upper half are closely and rather strongly punctured, the punctures forming rows. The basal 3 segments of the abdomen are closely punctured, except on the central depression on the petiole; the oblique furrows are finely striated. The apical segments are smooth. The anterior tarsi are black; thickly covered with white pubescence; the anterior tibiæ are black in front; the rest of the legs are of a darker blue than the body.

*Spiloxoriles*, gen. nov.

Antennæ slender, short, ringed with white, the apical four joints geniculated and angularly bent back from the others; the 3rd joint is distinctly longer than the 4th. Face raised in the centre, clearly separated from the lateral part; its apex rounded. Occiput distinctly margined. The apex of the scutellum distinctly keeled on the sides; the post-scutellum stoutly keeled laterally. The areola is widened at the apex and is separated from the posterior median by a stout transverse keel. The transverse median nervure is placed behind the transverse basal; the recurrent nervure is received distinctly beyond the transverse cubital by a greater distance than the length of the latter. The cubital nervure is broken shortly below the middle. The 1st segment of the abdomen is roundly convex and is without any depressions or furrows; the 2nd and 3rd segments have oblique depressions on the base. The basal joint of the hinder tarsi is shorter than the following joints united.

This genus may be separated from *Cyanoxorides* as follows:

Antennæ short, slender, not densely pilose, the 3rd joint distinctly longer than the 4th; the lash of the antennæ only 4-jointed, the face clearly separated from the orbits; the body not metallic blue: the areola separated from the posterior median area by a stout transverse keel; the basal joint of the hinder tarsi shorter than the other joints united.

*Spiloxorides*.

Antennæ long, stout, densely pilose, the 3rd joint not much longer than the 4th; the lash of the antennæ many jointed; the face not clearly separated from the orbits; body metallic blue; the areola not separated from the posterior median area; the basal joint of the hinder tarsi longer than the other joints united. *Cyanoxorides*.

*Spiloxorides ruficeps*, sp. nov.

Black, the head, the scape of the antennæ and the greater part of the fore legs, red; the base of the flagellum and a band beyond its middle and the apices of the 3rd to 6th abdominal segments narrowly and a broad band on the sheath of the ovipositor, white; the wings hyaline, the base of the stigma broadly white; there is a large fuscous band at the base of the stigma where it is narrow and it becomes gradually wider towards the end; there is a smaller fuscous cloud on the transverse cubital nervure extending into the radial cellule to the end of the recurrent nervure on its inner side. ♀.

Length 11 mm.; terebra 6 to 7 mm.

Hab. Kuching.

Vertex smooth and shining; the front keeled down the centre and closely and finely transversely striated. The centre of the face is broadly raised; this raised part is slightly narrowed and rounded at the apex, is bordered laterally by a keel and is coarsely, irregularly transversely striated; the depressed sides have a paler, more yellowish tint and are finely transversely striated on the inner side. The clypeus is separated from the malar space by a furrow; its apex is obliquely depressed and is transverse. The labrum is slightly rounded from the middle and is thickly covered with long golden hair. Mandibles black, narrowly dark rufous at the base. Mesonotum shining, aciculated crenulated, round the edges. Scutellum smooth and shining; the post-scutellum is broadly depressed and has the lateral keels much stouter than those on the scutellum. The metanotum is aciculated; its keels are bordered by short broken ones on either side. Pro- and mesopleuræ smooth and shining; the upper half of the meta-coarsely reticulated. Abdomen thickly covered with white pubescence; closely, minutely



punctured, more strongly on the basal than on the apical segments; the depressions are minutely striated. The ventral surface is pale brick-coloured. The front legs are dark rufous, the trochanters and tarsi darker coloured; the tibiæ have a pale yellow streak in front; the middle femora are bright rufous in front, dark behind.

*Lethulia*, gen. nov.

Areolet absent: the recurrent nervure united with the transverse cubital. Antennæ long and slender, the flagellum broadly ringed with white. Head cubital; the occiput margined, temples large, the malar space wide. Clypeus clearly separated from the face, depressed, its apex transverse and with a distinct margin, below which it is obliquely depressed. Mandibles broad; they have a short blunt subapical tooth. Parapsidal furrows wide, deep, the mesonotum distinctly trilobate. Metanotum with 3 distinct areæ at the base; spiracles linear, placed distinctly behind the middle. The hind legs longer than the others; their coxæ large, their trochanters long and distinctly narrower than the femora which are stouter than usual; their tibiæ are much longer than them; calcaria short; the 2 hinder claws are simple. The anterior tarsi are twice the length of the tibiæ; their claws and those of the middle bifid; the basal joint of all the tarsi is shorter than the 4 following united. If any thing, the recurrent nervure is received on the outer side of the transverse cubital; there is no stump of a nervure on the cubito-disco nervure.

This genus comes near to *Fislistina*; it may be known from it by the transverse, not rounded, apex of the clypeus and by its being clearly separated from the face, by the antennæ being longer, more slender and broadly ringed with white, by the very long hinder trochanters, by the petiole being more slender and longer than the 2 following segments united and by the hinder tibiæ being much longer compared with the tarsi.

*Lethulia flavipes*, sp. nov.

Black, the legs yellow, with the hinder coxæ and femora black; the antennæ white, broadly black at the base and apex;

the abdomen yellow broadly banded with black; the wings hyaline, with a narrow cloud below the stigma, and the apex is narrowly smoky. ♀.

Length 15 mm.; ovipositor 12 mm.

Hab. Kuching.

Head black, the face and clypeus and the malar space yellow, the face with a black mark in the centre; the inner orbits are yellow to near the upper ocelli. Front and vertex smooth and shining; the front with a distinct keel down the middle, extending from the ocelli to the base of the antennæ. Mandibles black, the base with large elongate punctures. Palpi yellow. Thorax smooth; the centre of the propleuræ striated; the lower part of the meso- obscurely and the meta- more distinctly punctured. Parapsidal furrows and the depression at the apex of the middle lobe transversely striated. The part behind the basal areae on the median segment is irregularly longitudinally striated and there are some irregular transverse keels down the sides; the centre at the apex is depressed; the depression becomes gradually wider to beyond the middle, it then becoming gradually obliquely narrowed to the apex, this part being bounded by distinct keels. Legs thickly covered with white pubescence. The basal two-thirds of the 1st and the basal halves of the 2nd to 5th abdominal segments black.

#### CRYPTINA.

#### MESOSTENINI.

##### *Skeatia flavipes*, sp. nov.

Black; the middle of the flagellum of the antennæ broadly white; a large mark of equal width throughout on the centre of the face, a small mark on the vertex touching the eyes, the tegulæ, scutellum, post-scutellum, a minute mark on the tubercles, a triangular mark under the hinder wings, the sides of the metanotum, a narrower line round the top and the spines, lemon-yellow. Legs lemon-yellow; the hinder trochanters, apical third of hinder femora, and the apical fourth of the hinder tibiæ black. The abdominal segments banded with yellow at the apex; the last segment is entirely yellow. Wings hyaline, the nervures and stigma are black. ♀.

Length 13 mm. ; terebra 3 mm.

Hab. Kuching, April 25th.

Face rugose, on the lower side obscurely longitudinally striated. Front with a distinct keel down the middle; the sides with irregularly twisted longitudinal or oblique keels. The ocelli are bordered laterally by a furrow. Mesonotum aciculated, closely and finely transversely striated along the furrows, which bear some transverse striæ. Scutellar depression with a stout, longitudinal keel in the centre. Scutellums smooth. Behind the postscutellum is a curved keel, with a more distinct longitudinal one running down from its centre. The basal area on the mesonotum is slightly longer than its width at the base; it becomes narrowed towards the apex which is transverse. The base behind the keel is strongly aciculated; the rest of the segment is longitudinally reticulated; the apical slope transversely so; the spines are long and project obliquely outwardly. Propleuræ stoutly in the middle and at the apex longitudinally striated. Mesopleuræ stoutly obliquely reticulated, except at the apex above; the furrow is crenulated. Metapleuræ closely and rather strongly obliquely striated; the striæ are more or less curved. Petiole smooth and shining; the 2nd and 3rd segments are aciculated; the others smooth. The 4 front tarsi are black.

*Skeatia varipes*, sp. nov.

Black; the inner orbits, the outer broadly from near the top, the face and clypeus, a line on the pronotum, a mark in the centre of the mesonotum, the scutellar keels, the scutellums, the sides of the metanotum, a curved line on its top uniting the lateral lines, the spines, the tubercles, the lower part of the mesopleuræ broadly—the mark with a curved incision in the middle above—the mesosternum, a mark under the hind wings and a large oblique mark in the centre of the metapleuræ, yellow. The 4 front legs pale yellow, their femora lined above with black, as are also the middle tibiæ behind; the hinder coxæ yellow, largely marked with black on the outer side; the hinder femora rufous, black from shortly beyond the middle, the tibiæ; and tarsi yellow, with the apical third of the tibiæ, black. Wings hyaline, the stigma and nervures fuscous black. ♀.

Length 14 mm.

Hab. Matang.

Antennæ black, the 5th to 6th joints white. Face strongly, but not very closely, punctured; the centre above closely transversely striated; the clypeus is more sparsely punctured. Mandibles black, broadly pale-yellow at the base. Front irregularly transversely striated and keeled down the centre. Mesonotum closely rugosely punctured; the parapsidal furrows transversely striated; the apex is more strongly transversely striated. The basal area on the median segment is smooth and shining; the rest of the metanotum is coarsely irregularly reticulated and punctured. The upper part of the propleuræ is punctured in front, striated behind; the lower part is stoutly distinctly striated. Mesopleuræ strongly and closely striated; obliquely below, more irregularly at the base above. Metapleuræ irregularly obliquely striated. Post-petiole irregularly punctured, the 2nd and 3rd segments closely and regularly punctured.

May be known from *S. flavipes* by the large yellow mark on the mesopleuræ, by the yellow mesosternum, by the mark on the mesonotum, by the rufous hinder tibiæ, by the yellow line on the metanotum, being semicircular, not transverse, etc. It is a much more robust species.

*Skeatia carinata*, sp. nov.

Black; the face, clypeus, inner orbits narrowly, the malar space, the pleuræ, the scutellum, post-scutellum, the space at their sides, the apical slope of the metanotum, a semicircular mark in the middle above it, the spines and the apices of the abdominal segments, yellow; the four front legs pale yellow; the hinder legs black, their coxæ for the greater part yellow, the tarsi white; the wings hyaline, the nervures and stigma black. ♀.

Length 13 mm.; terebra 5 to 6 mm.

Hab. Kuching.

Antennæ black; the 5th to 14th joints white. Face punctured, and obscurely transversely striated in the middle; on the top is a longitudinal keel which extends upwards between the antennæ. The lower part of the front is yellow; the black upper part is wrinkled in the middle. Middle lobe of mesono-

tum coarsely transversely striated, the lateral irregularly rugose-punctured; the apex is rufous and bears four stout longitudinal keels. There are 4 longitudinal keels on the scutellar depression; the scutellum is broadly black on the base. The lateral scutellar depressions and the depression on the base of the metanotum are stoutly striated. The basal area on the metanotum is raised, smooth and open at the sides on the base; the rest of the metanotum is closely, strongly striated; the striæ are straight at the base, on the rest they are curved downwards in the middle. Mesopleuræ on the lower side obliquely striated at the base; the meta-stoutly obliquely striated and broadly depressed in the middle. The spines are short, broad and rounded at the apex. Abdomen smooth and shining.

\* *Melcha maculipennis*, sp. nov.

Black; the median segment for the greater part red; the tegulæ, scutellum, post petiole, the apical third of the 2nd abdominal segment and the whole of the apical two whitish-yellow; the four front legs rufo-testaceous, the coxæ paler, the middle joints of their tarsi white, the base and apex black; hinder coxæ rufous; the trochanters, femora and base of tarsi blackish; the apical and basal joints of tarsi black, the middle joints white. Wings hyaline; there is a brownish cloud between the base of the stigma and the areolet and extending nearly to the opposite side of the wing where it becomes fainter and narrower; the apex is faintly clouded. ♀.

Length 9 mm.; ovipositor 2 mm.

Hab. Kuching.

Antennæ long, black, the 7th to the 11th joints white except above, the scape dark rufous. Front above obscurely longitudinally, below obscurely transversely striated. Thorax shining; the mesopleuræ alutaceous; the furrows more or less crenulated. Scutellum smooth and shining. Base of median segment smooth and shining; the part between the two keels rugose, the apical slope reticulated, the upper part more distinctly than the lower. Abdomen shining; the 2nd and 3rd segments are closely punctured; the gastrocels smooth and rufous.

\* *Melcha*, Cam. Ann. and Mag. Nat. Hist. Ser. 7, Vol. IX, 153.



The metanotal area does not reach to the base of the segment; it is open behind, almost square and of almost equal width throughout.

*Melcha annulipes*, sp. nov.

Black, shining, the apical slope of the median segment, the apices of the 1st, 2nd and 5th in the centre and the whole of the 6th and 7th segments above, white; the base and sides of the petiole rufous; the 4 anterior coxæ and trochanters; the femora rufous, the tibiæ pale, fuscous behind, the anterior tarsi blackish, the middle fuscous, white in the middle; the hinder coxæ rufous; the apical joint of the trochanters black; the femora rufous black above; the tarsi white, the last joint black; the basal third of the hinder tibiæ white. Wings hyaline with a faint cloud behind the areolet and a fainter one on the apex; the stigma and nervures dark fuscous. ♀.

Length 8 mm.; terebra 3 mm.

Hab. Kuching.

Face rugose, the clypeus smooth and shining. Mandibles white, rufous in the middle, the apex black. Palpi white. Front keeled, in the middle obscurely striated, the sides smooth and shining. Mesonotum shining; the tegulæ, tubercles, scutellum and post scutellum white. Base of median segment smooth; the area small, triangular, the nervures uniting before reaching the keel; the rest of the segment closely reticulated; the centre of the apical slope has a rufous tint. Propleuræ striated in the middle; the meso- more closely longitudinally striated, except at the apex above; the meta- closely, somewhat obliquely striated and reticulated. Abdomen very smooth and shining.

*Friona varipes*, sp. nov.

Black, shining; the scutellum, the post-scutellum, a large mark at its sides behind the wings, a large mark, rounded above, transverse below on the metapleuræ, the apices of the basal 6 abdominal segments and the whole of the 7th, pale yellow; the four anterior legs pale fulvous, the middle pair with a rufous tint; the hinder coxæ dark rufous, broadly yellow at the base above; the trochanters black; the tibiæ blackish, dark rufous at the

base ; the tarsi white ; the wings hyaline, the stigma and nervures black. ♀.

Length 13 mm.

Hab. Singapore.

Antennæ slender, black, the 11th to 19th joints white. Face coarsely alutaceous, a short mark on it under each antennæ; opaque sparsely covered with short white pubescence. Clypeus roundly convex, smooth and shining. Mandibles broadly white at the base. Labrum and palpi white. Front pro- and mesopleuræ striated, as with the other species of the genus; the metanotum from the transverse keel is transversely, but not very strongly, striated; in the centre of the striated part is a broad yellow line, which unites with a transverse one on the apex. The median segment is thickly covered with long white hair. Abdomen smooth and shining. The coxæ, trochanters and femora are covered with long white; the extreme base of the hinder tarsi and their apical joint black.

#### ICHNEUMONINA.

##### JOPPINI.

##### *Cratojoppa maculiceps*, sp. nov.

Black; largely marked with pale yellow; including the sides and apex of the scutellum narrowly, the areola and two oblique marks on the apex of the median segment; the legs pallid yellow; the four front femora above, the hinder entirely; the apical half of the middle tibiæ behind, almost the apical two-thirds of the hinder and a narrow band on their base, black; the wings hyaline, the nervures and stigma black. ♀.

Length 17 mm.

Hab. Kuching.

Antennæ black; the 9th to 23rd joints white. Head smooth and shining; the face and clypeus sparsely punctured; on the face are two black lines which become wider below and run into the foveæ. Mandibles and palpi whitish-yellow; the mandibular teeth black. On the thorax, a narrow line on the pronotum, the tubercles, the mesopleuræ below, two small spots on the centre of the mesonotum, the sides and apex of the scutellum narrowly, its keels, the post-scutellum, a conical mark behind

the spiracles, the elongated areola, two oblique marks on the apex of the metanotum outside the posterior median area and the apices of all the abdominal segments (the line on the 2nd being broader than the others), pallid yellow. Mesonotum distinctly and irregularly punctured, except at the apex; the scutellum is more strongly punctured, with a smooth line in the middle on the basal half. Metanctum strongly, deeply and irregularly punctured; the basal area on the base and inner sides smooth; the areola has two elongated closely punctured spots in the centre; the posterior median area is stoutly, transversely striated, as is also the spiracular area beyond the spiracles. Pro- and mesopleuræ smooth; the meta- above the keel closely rugosely punctured. Petiole smooth and shining; the 2nd and the 3rd segments are closely punctured, the 2nd more strongly than the 3rd; their base closely longitudinally striated in the centre; the gastrocoeli smooth and shining.

The colouration of the body is almost identical with that of *C. robusta*, Cam., but that species may be known from it by the four front legs being without black; and the hinder femora are rufotestaceous, with the apical third black.

#### ACULEATA.

#### FOSSORES.

#### *Mutilla attila*, sp. nov.

Black, the basal two segments of the abdomen ferruginous; the wings dark fuscous-violaceous paler at the base; the apex of the clypeus transverse, the tegulæ large, black; the outer edge turned up and paler in tint. ♀.

Length 13 mm.

Hab. Lingga.

Front and vertex almost uniformly rugosely punctured; sparsely pilose; the face, clypeus and cheeks thickly covered with long griseous hair. Apical half of clypeus convex, the base flat; its apex transverse. Middle of mandibles rufous. Pronotum and upper part of propleuræ closely rugosely punctured; the rest of pleuræ smooth. Mesonotum shining; bare; the furrows deep; there is an impressed line down the centre. Scutellum coarsely rugosely punctured, the punctures large and

almost forming reticulations; it is not much raised and there is no smooth space. Median segment coarsely reticulated; the basal area reaches to the middle of the segment; it is not much widened at the base and there is a large, wider area on either side at the base. The 2nd cubital cellule is not much shorter than the 3rd; the 2nd cubital nervure is broadly, roundly curved outwardly; the apex of the radius is straight and oblique. The 2nd abdominal segment is narrowed at the base and bulges roundly outwardly; the ventral keel is not very prominent and is narrowed at the apex. The last segment is smooth in the middle; its apex is distinctly raised.

*Mutilla Cæcina*, sp. nov.

Black, thickly covered with white hair; the 1st and 2nd abdominal segments ferruginous; the wings fuscous with a violaceous tinge: the extreme base of the front and almost the basal half of the posterior pair hyaline, the nervures and stigma black; the apex of clypeus incised. ♂.

Length 12 mm.

Hab. Lingga. November.

Front and vertex some what strongly longitudinally striated; the vertex behind and between the ocelli much more finely striated. Antennal tubercles bright red. Face and clypeus smooth, thickly covered with soft white hair; the apex of the clypeus with a round incision; its middle flat. Mandibles black, rufous in the middle; the palpi black, mixed with fuscous. Pronotum strongly rugosely, closely punctured; its apex thickly covered with depressed dark grey pubescence; the mesonotum is more shining, and more strongly but not so closely, punctured. Scutellum strongly rugosely punctured and covered with long black hair. Median segment strongly reticulated; its central area not quite reaching to the middle; its basal half dilated. The basal half of the propleuræ rugosely reticulated; the apical smooth, with some obscure longitudinal striæ. Mesopleuræ closely rugosely punctured. Metapleuræ irregularly reticulated except in the middle and at the base above. Legs thickly covered with white hair; the spurs pale. The basal abscissa of the radius is slightly curved outwardly; the apical broadly, roundly curved and is longer than the middle two unit-

ed; the 3rd cubital cellule above is distinctly shorter than the 2nd. The 2nd abdominal segment becomes gradually wider towards the middle, it is not being dilated in the middle, nor narrowed at the apex; the last segment has a broad, smooth glabrous band extending from near its base to the apex and becoming gradually wider towards the apex. The ventral keel is slightly dilated at the apex. Tegulæ black on the inner side, the middle rufous, the outer edge paler.

This is a more slenderly built species than *M. atilla*; it may be known from it by the incised apex of the clypeus and by the front and vertex not being uniformly rugosely punctured.

*Discolia ocina*, sp. nov.

Black; the vertex and the upper half of the outer orbits pale orange; the wings uniformly dark purple-violaceous; the apical half of middle lobe of the mesonotum almost impunctate; the median segment strongly punctured except laterally at the base. ♀.

Length 13 mm.

Hab. Java.

Vertex smooth; the upper part of the front strongly irregularly punctured; the lower opaque, shagreened and distinctly furrowed in the middle. Clypeus smooth, flat, slightly narrowed towards the base; its depressed apex stoutly longitudinally striated. The scutellum is more strongly and closely punctured than the mesonotum. Post-scutellum punctured at the base and the sides. Pleuræ closely punctured. Meso- and metanotum thickly covered with stiff black hair. Abdomen smooth and shining and sparsely covered with short black hair. The hair on the legs is long, stiff and black.

Comes near to *D. humeralis*.

*Triscolia crassiceps*, sp. nov.

Black, shining, above covered with black hair; the front closely and strongly punctured, the vertex almost impunctate; the temples large, nearly as long as the front half of the head; their sides broadly rounded; the clypeus raised in the centre, flat; its apex with a row of small punctures, the central part of the metanotum and the outer part of the lateral parts closely



and strongly punctured: the abdomen shining, finely punctured on the base of the segments; the hair fringe black; it has a violaceous tint in certain lights; the wings uniformly fuscous-violaceous. ♀.

Length 15 mm.

Hab. Matang, 3600 feet.

Characteristic of this species is the large head, largely developed behind the eyes and as wide as the thorax. Antennæ short, thick and bare. Mandibles almost impunctate, fringed below with long rufous hair. The centre of the prothorax is smooth and shining; the sides strongly and closely punctured. There is a distinct, deep longitudinal furrow on the sides of the mesonotum, which is strongly, but not closely, punctured and has two smooth longitudinal bands near the centre. Scutellum with a band of large punctures round the edges and with a curved row in the middle. Post-scutellum strongly punctured, most sparsely in the centre. The apical slope of the median segment is impunctate. The raised middle part of the mesopleuræ is strongly punctured; the upper and apical parts of the metopleuræ sparsely and not very strongly punctured. Pygidium covered thickly with long black hair.

Comes near *T. Kollari*, Sauss., and *T. macrocephala*, Grib.

*Agenia acilla*, sp. nov.

Black, shining, smooth, covered with a silvery pile; the wings hyaline; a narrow cloud along the transverse basal and the transverse median nervure (the larger part of it on their outer side) and a wider cloud extending from the base of the stigma to shortly beyond the middle of the 2nd cubital cellule and backwards extending to the discoidal nervure. ♀.

Length 9 to 10 mm.

Hab. Kuching.

Head opaque, alutaceous, the apex of the clypeus smooth and shining. Mandibles rufous behind the apex. Palpi black, the apical joints fuscous; the hair bundle long and black. Hinder ocelli separated by a slightly less distance from each other than they are from the apex. The scutellum and post scutellum shining. The apical half of the median segment is

obscurely transversely striated and thickly covered with silvery pubescence. The tibiæ are not grooved and are sparsely covered with short spines; the tarsi are more thickly spined; there is a straight tooth near the middle of the claws. The 1st transverse cubital nervure is rounded, obliquely bent on the top; the 2nd abscissæ of the radius and cubitus shorter than the 3rd; the 1st recurrent nervure is received almost in the centre of the cellule; the transverse median nervure is received distinctly beyond the transverse basal; the accessory nervure in the hind wings is distinctly appendiculated.

The temples are well developed and rounded broadly behind; the median segment is longer than usual, has an obliquely rounded slope and is indistinctly furrowed down the middle; the pronotum is as long as the mesonotum and is rounded at the apex; the pygidium is thickly covered with long fuscous hair, is opaque, with a shining line in the centre.

*Pompilus panyasis*, sp. nov.

Black; thickly covered with silvery pile; the wings fuscous-hyaline, the apex from the base of the stigma much darker and with a distinct violaceous tinge; the base of the mesonotum with the sides straight and oblique, the apex of the pronotum therefore not rounded. ♀.

Length 12 mm.

Hab. Penrissen.

Apex of clypeus broadly rounded. Eyes parallel, very little converging above. Hinder ocelli separated from the eyes by more than double the distance they are from each other. temples very little developed; the occiput transverse. Pronotum moderately large, the sides rounded. Median segment short, rounded; pilose and thickly covered with long pale hair. Tibiæ and tarsi stoutly, but not thickly, spined. Second cubital cellule about one-third shorter than the third; the 1st transverse cubital nervure is oblique and rounded; the 2nd is not oblique and is broadly, roundly bent towards the apex of the wing; the 1st recurrent nervure is received shortly beyond the middle; the 2nd near the apex of the basal third of the cellule; the accessory nervure in the hind wing is interstitial. The transverse basal nervure is roundly curved.

*Salius robertianus*, sp. nov.

Black; the head, the pronotum, mesonotum, tegulæ, scutellums, the scape of antennæ, the under side of the flagellum and the legs, except the coxæ and trochanters, fulvous; the wings dark yellowish-hyaline, the radial, the apical 3 cubital cellules, the apical two discoidal and the apical cellules, fuscous, with a distinct violaceous tinge. ♂.

Length 23 mm.

Hab. Kuching.

The joints of the flagellum are roundly curved below. Head and fore part of the thorax covered with a short golden pile. Apex of mandibles black. The front, vertex and occiput are infuscated; the front is distinctly furrowed down the centre. Post-scutellum prominent, broadly roundly convex, not raised above the level of the scutellum, and not raised in the centre. The median segment transversely, but not strongly striated, except on the apical slope. The 2nd and 3rd abscissæ of the radius are almost equal in length; the 1st discoidal cellule is almost hyaline, and has an elongated fuscous streak in the middle; the 3rd transverse cubital nervure has its upper half straight and oblique; the apical abscissa of the radius is straight and oblique; the basal nervure is roundly curved. The eyes are only slightly curved on the inner side and only slightly converge above and not at all below. The prothorax does not project outwardly above in the middle; the base of the mesonotum is broadly rounded, its sides not straight and oblique, as in *S. flavus*. The fore coxæ are only black behind; the hinder femora are blackish at the base.

Belongs to the group of *S. flavus*, except that the yellow colour in the wings is not clear.

*Salius brookei*, sp. nov.

Fulvous-yellow: the pleuræ dark fuscous, the apex of the median segment black; abdomen black; the ocelli in a black mark; the wings clear yellowish-hyaline; the stigma and nervures fulvous-yellow. ♀.

Length 14 mm.

Hab. Kuching. February.

Head in front longer than usual. Eyes distinctly curved on the inner side. Pronotum with a distinct wide furrow in the centre. The post-scutellum is more narrowed towards the centre than is the scutellum. The striation on the median segment is indistinct on the basal half. Tibiæ and tarsi distinctly, but not thickly, spined; the claws have a stout tooth at the base. The 2nd cubital cellule at the top is about two-thirds of the length of the first; below not much shorter than it; the 3rd transverse cubital nervure is roundly curved; the first recurrent nervure is received close to the base of the apical third of the cellule; the transverse basal nervure is straight and sharply oblique; the transverse median nervure is straight and sharply oblique and is separated by almost its own length from the transverse basal. The accessory nervure in the hind wing is not interstitial. The apex of the abdomen is dark fulvous and is thickly covered with pale fulvous hair.

*Stizus Borneanus*, sp. nov.

Black; the face below the antennæ, the clypeus, except for a large mark beneath, the labrum, the lower side of the scape a narrow line on the apex of the pronotum, interrupted in the centre and not extending to the outer edges, the tubercles, the outer edge of the tegulæ—their base entirely—a large oval mark on the sides of the scutellum, a small mark behind it, the greater part of the post scutellum, the sides of the median segment in the middle; a large mark, much broader than long, on the apex of the first abdominal segment, a line on the apex of the 2nd segment, dilated at the sides, a narrower one on the 3rd and 4th, a mark on the sides of the 5th and the sides of the 2nd and 3rd ventral segments—the marks narrowed on the inner side—yellow. Legs black, the apex of the 4 front femora, and the greater part of their tibiæ and tarsi anteriorly; and the basal half of the hinder tibiæ behind, yellow. Wings hyaline, the nervures and stigma black. ♀.

Length 11 mm.

Hab. Kuching.

The basal seven joints of the antennæ are brownish beneath. The black mark on the clypeus is narrowed towards the top; its centre above is roundly incised. The centre of the front is

shagreened; the sides bear silvery pubescence and the lower inner orbits are yellow; the vertex is impunctate and is, as is also the occiput, thickly covered with long fuscous hair. Thorax shining, impunctate, thickly covered with pale pubescence, which is longest on the median segment. Abdomen shining; the apices of the middle and apical segments covered with stiff black hair; the last smooth and bare in the middle. The posterior angles of the median segment are broadly rounded; the front is narrowed beneath; there is no violet iridescence on the thorax or abdomen.

Belongs to the group of *S. semperi*, Hand. *S. socius*, Hand. has been taken at Sarawak by Mr. Shelford.

*Ampulex foveifrons*, sp. nov.

Green, largely marked with blue, the lateral lobes of the mesonotum, and the basal area of the metanotum purple; the pleurae brassy; the four posterior femora red; the antennae short and thick; the 3rd joint distinctly longer than the 4th; the apex of the median segment bluntly rounded and without teeth on the apical lateral margins; the keels on the metanotum short, not extending much beyond the middle and three in number; the outer united at the apex with the central. Wings fuscous with a violaceous tinge; the apex of the radius broadly rounded, extending slightly beyond the top of the apical transverse cubital nervure. ♀.

Length 18 mm.

Hab. Kuching.

Antennae stout, black, nearly as long as the thorax. Head large, nearly as wide as the mesothorax. Temples largely developed, not narrowed behind the eyes and rounded behind. Front closely and distinctly, but not strongly, punctured; the vertex more sparsely punctured; behind the ocelli are three large, elongated and two small foveae in a row; the eyes are separated by about four times the length of the antennal scape. Clypeus broadly keel; its apex roundly projecting below. The raised part of the pronotum is broader than long, slightly narrowed and rounded at the base and about one fourth shorter than the mesonotum; the lower depressed part is coarsely longitudinally



punctured and deeply furrowed in the centre. Parapsidal furrows complete; deep and crenulated. The scutellar depression narrow, deep, crenulated. The central keel of the metanotum is straight; the lateral are curved and become united to the central, forming a large curved area, broader at the base than at the apex and marked with seven stout transverse keels; outside it is a large curved depression not bounded on the outer side by a keel and ending at the inner apical part in a round fovea; the middle part of the apical slope on the sides are irregularly punctured; the lower transversely striated. Pleuræ sparsely punctured; the upper part of the meta-bordered by a wide longitudinal furrow, which is irregularly striated. The anterior tibiæ and all the tarsi are brownish; the fore femora are black, green above; the middle tibiæ black, marked with green behind; the hinder bluish-green. Tarsal joints thickly spined; the joints narrow, longish; the claw-tooth broad at the base, becoming gradually narrowed towards the apex, which is sharp-pointed. The basal segment of the abdomen above is large, rounded, but not narrowed, at the base above, slightly broader than long and not very much shorter than the 2nd segment; the 3rd segment is not much shorter than the 2nd. The base of the 2nd segment projects straight downwards; the apex of the 1st segment in front of it projects roundly, but not much, downwards.

There are only two transverse cubital nervures; the upper three-fourths of the 2nd is straight and oblique, the lower is also straight, but without an oblique slope; it is united to the radius at a short distance from its apex.

This species is easily known by the broadly rounded, toothless apex of the median segment; by the short central keels on the metanotum and by there being no lateral ones, by the broad head and thorax, by the short, thick antennæ, by the straight, obliquely bent 2nd transverse cubital nervure and by the basal three segments of the abdomen being of almost equal length.

It is possible that this species may be *A. hospes*, Sm. (which Kohl thinks may be a var. of the Javanese *A. cognata*, Kohl,) but Smith's descriptions are not sufficient to enable me to decide this; as is unfortunately the case with too many of his Malay species.

*Ampulex rufo-femorata*, sp. nov

Green; largely marked with blue, the pleuræ with brassy tints; the antennæ black, the 3rd joint about one half longer than the 4th; the temples sharply obliquely narrowed; metanotum closely transversely striated; all its keels reach close to the apex of the segment; the central one bifurcates obliquely at the apex, the end keels uniting to the apex of the 3rd keel; all the trochanters and femora and the fore tibiæ are red; the tarsi black; the wings infuscated; the apical third darker clouded; the 1st transverse cubital nervures obliterated; the 3rd is received at a short distance from the apex of the radius; the 2nd segment is distinctly longer than all the following united; at its base below it has a rounded oblique slope. ♀.

Length 14 mm.

Hab. Mount Sibou.

Front and vertex sparsely punctured; the latter depressed broadly in the middle; the inner orbits are margined; the keels leading into the antennæ are long, stout and oblique; between them, below, are some curved furrows: the eyes at the top are separated by the length of the antennal scape and pedicle united. The raised part of the pronotum is shortly, but distinctly, longer than its breadth at the apex and is slightly narrowed at the base. The metanotum is not much shorter than the mesonotum; its teeth are stout and long; its apical slope is covered, except in the centre above, closely with curved striæ and is thickly covered with white pubescence. Mesopleura strongly punctured under the wings; the upper part of the meta obliquely striated, the striæ becoming closer and extending lower down on the apex. The abdomen, seen from the back, is as in *A. spectabilis*, cf. Kohl's fig. Ann. Hof. Mus. Wien. VIII, pl. XII, f. 35.

The ventral segments are as in his figure 36 pl. XII, but with the slope not quite so gradual. The hinder tibiæ are blue behind.

In Kohl's table this species would come in near *A. erythropus*.

*Trirogma nigra*, sp. nov.

Black, shining; the head and thorax thickly covered with long white hair, as are also the coxæ, femora and ventral sur-

face of the adomen; wings hyaline, infuscated towards the apex, the nervures and stigma black. ♂.

Length 12 to 13 mm.

Hab. Santubong.

Antennæ as long as the body, black; the apical joints slightly curved. Vertex strongly, but not closely, punctured, more sparsely behind the ocelli; the front closely reticulated; both are sparsely covered with long white hair. Face and clypeus thickly covered with long depressed white hair, which hides the texture. Prothorax smooth and shining; the pleuræ with some striæ in the middle; the pronotum at the apex cleft, the sides rising into large, oblique pyramidal, oblique tubercles. Base of the mesonotum is coarsely rugosely punctured, and in the middle irregularly striated; its middle at the apex is smooth, shining and roundly convex. Scutellum not much raised, smooth and shining. Metanotum shining; in the centre is an oblong area, with straight sides and apex; from its apical angles issues a short curved keel, and from the sides, near the middle, two curved longer ones; outside this are two oblique keels; united at the apex by a shorter one, which is roundly curved inwardly; from these keels the segment slopes obliquely to the tubercles, to which they are united by some keels; there being also some keels behind them. From the tubercles a keel runs round the sides and apex. Abdomen smooth and shining; the petiole, sides and ventral surface thickly covered with long white hair. The first transverse cubital nervure is obliquely bent at the top; the second is roundly curved.

This species is easily separated from the known species by its black body. The metathoracic spines, too, are more prominent than usual.

*Cerceris malayana*, sp. nov.

Black; the face, clypeus, the scape, 2 broad marks on the pronotum, tegulæ, post-scutellum, two large marks, irregularly oval in shape, on the apex of the median segment, a large broad mark on the base of the 2nd abdominal segment; a broad band—widest on the sides—on the apex of the 3rd segment; and a narrow band on the apices of the 5th and 6th, yellow. The four front legs yellow, with a broad band on the femora behind; the

hinder femora, the base of the hinder tibiæ narrowly, their apex more broadly and the hinder tarsi black. The area on the metanotum smooth, with a deep crenulated furrow in the centre. Wings hyaline, the radial cellule and the apex of the 4th cubital cellule smoky; the stigma dark fuscous. ♂.

Length 8 mm.

Hab. Kuching.

Flagellum of antenn below and the apical joint also above brownish-red; the pedicle entirely black. Front and vertex closely and strongly punctured; the face and clypeus less closely and covered with white pubescence; the yellow on the face is obliquely, sharply narrowed above; laterally it extends along the eyes to the base of the antennæ. Thorax strongly and closely punctured, except the metanotal area which is smooth and shining except at the apex; its central furrow does not commence at the base which is obliquely depressed. Abdomen strongly punctured; the pygidium is only slightly narrowed at the base and apex; its basal half strongly punctured, its apex transverse; the apex of the hypopygium is roundly incised.

\* *Pison Sarawakensis*, sp. nov.

Black; densely covered with silvery pubescence; the apex of the median segment with a rather steep slope, its base closely and finely obliquely striated, the striæ springing from the central furrow, which is shallow, the wings hyaline, the nervures blackish, the tegulæ and calcaria testaceous.

Antennæ black, thickly covered with silvery pubescence. Front and vertex alutaceous; the rest of the head thickly covered with silvery pubescence. Mandibles for the greater part rufous; the palpi brownish. The thorax is thickly covered with silvery pubescence, closely, minutely punctured: on the centre of the mesonotum are two shining, longitudinal lines. The furrow on the metanotum is wide and shallow; in its centre is a thin irregular keel: the base of the segment is obscurely obliquely striated; the apical furrow is wide. Abdominal segments banded with silvery pubescence; closely, microscopically

\* *Pison* is treated by Bingham as a neuter word. It is, however, a masculine word—the name in fact of some Biblical or Classical personage, I forget which.

punctured. The wings are slightly infuscated at the apex; the first recurrent nervure is received in the 1st cubital cellule, distinctly in front of the transverse cubital nervure; the 2nd in the centre of the 2nd; the pedicle is distinctly longer than the branches of the transverse cubital nervures.

*Trypoxylon annulipes*, sp. nov.

Black; the head and thorax thickly covered with golden pubescence, the anterior tarsi and the base of the tibiæ testaceous; the front stoutly keeled above the antennæ; the 2nd and 3rd segment more or less rufous; the wings hyaline. ♀.

Length 17 mm.

Hab. Matang, 2500 feet.

Antennæ black; the scape on the under side covered with white pubescence. The head, except on the front, is thickly covered with golden pubescence; the front is alutaceous; its upper part is obscurely furrowed in the centre; its lower stoutly keeled. Clypeus keeled in the middle. Mandibles piceous at the base. Palpi white. Thorax thickly covered with long golden pubescence; smooth and shining. The furrow on the base of the metanotum shallow, indistinct and becoming wider towards the apex; on the apical slope it is deeper, wider and with obliquely sloped sides. Legs covered with a pale pile. Abdominal petiole as long as all the other segments united.

There are no lateral furrows on the base of the metanotum.

VESPIDÆ.

*Montezunia flavobalteata*, sp. nov.

Black; the clypeus, except for a broad line in the middle, not reaching to the apex and obliquely narrowed below, the eye orbits—the inner entirely and the outer from near the top—the mandibles, except on the inner side, the prothorax, except on the basal slope, and an oblique mark—narrowest below—on the propleuræ, two narrow lines on the mesonotum, the basal half of the scutellum, except narrowly in the centre, the post-scutellum, the median segment except for a curved mark at the base, a line down the centre and an irregular mark on the centre of the metapleuræ above, yellow. Wings hyaline, the apex



slightly infuscated, the stigma fulvous. Legs yellow; the apices of the four front femora above, the hinder almost entirely, the base and lower side of the hinder tibiae and the basal joints of the hinder tarsi, black. Abdominal segments narrowly lined with yellow; two longish lines near the base of the petiole and two long, curved, somewhat pyriform, (the narrow end at the base) marks on the base of the 2nd segment and the whole of the apical segment, yellow. ♀.

Length 14 mm.

Hab. Penrissen.

Front and vertex strongly and closely punctured; the lower part of front reticulated. Clypeus broadly but not deeply incised. Mandibles on the top and at the apex black. The clypeus is as long as its greatest width. Thorax strongly and closely punctured; the longitudinal and the vertical furrows on the base of the mesopleuræ are deep; the furrow on the median segment is deep and is keeled in the centre. The petiole is about one fourth longer than the 2nd segment; it becomes gradually wider towards the apex. The 2nd cubital cellule is much narrowed at the top, the nervures almost touching there; the 2nd recurrent nervure is almost interstitial; if anything it is received in the 3rd cubital cellule. Petiole distinctly punctured; the other segments smooth.

The wings are longer than usual and extend beyond the apex of the abdomen the 2nd segment of the abdomen is broad at the base and is not contracted there. Maxillary palpi apparently four jointed; the last joint minute; the joints bearing stiff long hairs.

This is not a typical *Montezumia*, but it fits better into that genus than into any other. It has also some affinity with *Pterochilus fulvipennis*, Cam. (which is not a typical *Pterochilus*), having the palpal characters of that species (cf. Manchr. Memoirs, 1898), the joints being sparsely covered with stiff hairs and the last minute. Characteristic is the greatly narrowed at the top 2nd cubital cellule and the interstitial 2nd recurrent nervure.

*Zethus rufofemoratus*, sp. nov.

Black; the four hinder coxæ, trochanters and femora red, the clypeus, except for a black mark in its centre, which is pro-

duced slightly in the middle above and largely and roundly in the middle below, a small square mark in the middle above the antennæ, a line on the under side of the scape, a line on the apex of the pronotum, narrowed in the centre, two marks on the centre of the scutellum, two of similar size on the post-scutellum, a small oval mark on the sides of the median segment, two large oblique ones on its sides, which become gradually wide towards the apex and a large longish mark, broader on the upper than on the lower half, on the pleuræ below the tegulæ and a narrow line, slightly interrupted in the middle, on the apices of the 1st and 2nd segments, yellow. Wings almost hyaline, with a distinct violaceous tinge; its apex and the apex of the costal cellule smoky-violaceous, the nervures and stigma black.

Length 14 to 15 mm.

Hab. Kuching.

Front and vertex strongly and closely punctured, except on the former on the sides below. The clypeus is as strongly but not so closely, punctured; its apex, sides and a mushroom-like mark in the centre are black; it is wider than long; its apex is about half the width of the top and is slightly, broadly incised, not transverse. Pronotum smooth and shining. Mesonotum, except on the sides at the apex, strongly and closely punctured. Scutellum flat, somewhat strongly, but not closely, punctured; on the basal depression are five stout keels. Metanotum with a large, triangular punctured band in the centre at the base; the central depression becomes gradually wider from the upper third, which is a little narrowed at the base and is bounded by a stout transverse keel at the apex. Pro- and mesopleuræ coarsely rugosely punctured. Metapleuræ coarsely shagreened and sparsely punctured. The basal three segments of the abdomen are closely punctured. The fore femora are broadly yellow beneath and there is a line, narrowed above, on the upper half of the fore tibiæ. The 2nd cubital cellule is triangular, the nervures almost touching above; the 2nd transverse cubital nervure is interstitial. When fresh the body was probably thickly covered with pale pubescence.

Comes nearest *Z. 4-dentatus*, Cam., "Entomologist," December, 1902, 314. There is a smooth longitudinal line on

the centre of the vertex behind. There are two longish subapical closely united, not very distinct, subapical teeth on the mandibles; there is a distinct raised transverse keel on the base of the petiole; near it on the sides is a tubercle.

*Odynerus rugifrons*, sp. nov.

Black; the clypeus, mandibles except at the apex, a line on the front broadly dilated below and not reaching to the ocelli, the inner eye orbits, broadly below, narrowly above the sinus, the outer orbits, the prothorax broadly in front, two narrow lines on the mesonotum, two large marks on the scutellum, post-scutellum, the greater part of the mesopleuræ, the median segment, except for a black band down the centre, the apices of the abdominal segments narrowly and two large, somewhat pyriform, marks—the narrow end at the base—near the base of the 2nd segment, yellow. Legs similarly coloured; a line on the apical half of the middle femora, a shorter one on the base of the middle tibiæ, the hinder femora and tibiæ broadly above and the base of the hinder tarsi black. Wings hyaline, the apical three-fourths of the radial cellule and the cubital cellules in front below it and the apex of both wings more faintly all round, smoky. ♀.

Length 12 to 13 mm.

Hab. Kuching.

Front and vertex closely and strongly punctured, the front much more strongly than the vertex, which is almost smooth in the middle; the punctures on the front run into reticulations above. Clypeus sparsely punctured; it has an oblique slope from the middle towards the base and apex; the apex has a wide, round incision; the apical angles stout. Thorax above coarsely, strongly rugosely punctured. The postscutellum is separated from the post-scutellum by a moderately, almost smooth, furrow and is not clearly separated from the metanotum, which has a rather steep, oblique slope. The 2nd cubital cellule is narrowed above; the 1st transverse cubital nervure is oblique and roundly curved downwards; the 2nd is broadly roundly curved outwardly; the 2nd recurrent nervure is almost interstitial. Abdomen shining, the 2nd segment large, longer than its width at the apex and more than twice its width at the base.

The head is large and is well developed behind the eyes; the temples are broadly rounded; the base of the thorax is rounded, not transverse; the sides of the median segment are rounded, without any angles and the stigma is fulvous.

This species has the colouration of *O. hyades*; that species may be known from it by the apex of the clypeus being transverse, by the temples not being rounded, by the base of the thorax being transverse and by the sides of the median segment projecting and its apex transverse.

*Odynerus hyades*, Cam.

This species (described Journ. Str. Br. R. A. Soc., 1902 112), is variable as regards the amount of yellow on the body and of the black on the legs. The pronotum is transverse, not rounded.

*Odynerus* ?—*fasciatus*, Sm.

This species has been taken at Matang, 3,600 feet and at Sabras. It is easily known by the body being thickly covered with black erect hair, and by all the abdominal segments being banded with yellow. It is probably a variable species as regards the quantity of yellow on the head and thorax and also as regards the amount of black on the legs. The ♂ has the clypeus entirely yellow; not broadly marked with black in the centre as in the ♀; it is also slightly roundly incised at the apex, not transverse as in the ♀. Characteristic is the fact the first two transverse cubital nervures are almost united at the top.

The species has a close resemblance in form and colouration to a *Vespa*. It is probably of wide range in Malaya and has been recorded from Sumatra by Gribodi who describes it in full in Bull. Soc. Ent. Italiana, XXIII.

*Odynerus carinicollis*, sp. nov.

Black; the prothorax red; the clypeus, except for a black transverse mark in the middle, the eye incision, a mark, roundly dilated at the apex on the lower part of the front, a line on the upper half of the eye orbits, the edge of the median segment and

of all the abdominal segments, yellow. Wings hyaline, the greater part of the radial cellule smoky, the cloud projecting into the upper part of the cubital cellules. ♂.

Length 7 mm.

Hab. Kuching.

Scape of antennæ yellow beneath; the flagellum brownish, black above. Front and vertex closely and strongly punctured, on the front running into reticulations; the front keeled between the middle. Clypeus sparsely punctured; its greatest width slightly greater than the length; the apex depressed and slightly, roundly incised. Base of thorax transverse, sharply keeled; the scutellum is more widely punctured than the mesonotum. The apex of the median segment is transverse, keeled and with a slight incision in the centre; the yellow line is dilated on either side of the incision. The lower half of the base of the meso- and the greater part of the base of the metapleuræ smooth, impunctate. The basal three abdominal segments are obscurely punctured; the base of the first is indistinctly bordered. The hinder tibiæ are for the greater part black, the four anterior greater part yellow: all the tarsi are for the greater part yellow.

*Odynerus Robertianus*, sp. nov.

Black; the clypeus except for a broad curved black mark above the narrowed part, a minute spot behind the eyes and a line on the apex of the 1st and 2nd abdominal segments, yellow; the legs black, with the four anterior tibiæ yellow in front; the wings almost hyaline, the apical two-thirds of the radial cellule and the anterior half of the apical cubital cellule smoky; the petiole keeled at the base. ♀.

Length 9 mm.

Hab. Kuching.

Head above the antennæ coarsely rugosely punctured and covered with a pale pubescence; the outer orbits sharply keeled; the clypeus sparsely punctured, its greatest width as great as its length; its apex longitudinally depressed in the centre; the apex black, widely, but not deeply, incised; the sides not projecting into teeth. Thorax rugosely punctured; the post-scutellum and metanotum more coarsely than the rest. the punctures



almost forming reticulations; the apex of the median segment slightly projects on the top; the sides have a straight, slightly oblique slope from the top to the bottom. The 1st and 2nd abdominal segments are closely and strongly punctured; the 1st is cup-shaped, broader than long; its base is stoutly, irregularly keeled; the 2nd is longer than its width in the middle and is narrowed at the apex.

The clypeus is not bordered laterally by a keel as in *O. Sichelii*; the antennal keel is not so stout nor so well defined as it is in that species, which has not the apex of the fore wings clouded.

*Rhynchium Matangense*, sp. nov.

Black; the apex of the thorax and the basal segment of the abdomen dark rufous; the under side of the scape and a large mark, roundly narrowed above, on the clypeus, yellow; the ventral surface and the apex of the abdomen densely covered with silvery pubescence; the wings hyaline, radial and the apical cubital cellules fuscous with a distinct violaceous tinge; the greater part of the hinder femora and a line on the middle, rufous. ♂.

Length 13 mm.

Hab. Matang.

Flagellum of the antennæ brownish beneath; the apical spine stout, slightly roundly curved. Front and vertex closely rugosely punctured; the eye incision more widely and strongly punctured than the rest; the clypeus is less strongly and closely punctured; its apex is slightly roundly incised, broad. There is a white mark on the base of the mandibles. Thorax coarsely rugosely punctured; the scutellums more coarsely than the mesonotum, and the median segment more coarsely—running into reticulations—than the mesonotum. The apex of the median segment has an almost vertical slope; its centre furrowed; the sides broadly rounded and without spines forming two broad lobes. Mesonotum covered with short fuscous pubescence. First segment of abdomen cup-shaped, with a short, but distinct, neck; the 2nd segment is barrel-shaped; obscurely rugose; the 3rd and 4th segments are more strongly and distinctly punctured.

*Ischnogaster fuscipes*, sp. nov.

Black; the clypeus except for a somewhat elongated pyriform mark on its upper half in the centre, yellow; the legs dark fuscous; the wings hyaline, with a violaceous tinge, highly iridescent and infuscated at the apex; the 3rd abscissa of the radius is somewhat more than one-half the length of the 2nd and about one-third longer than the 4th; the 3rd transverse cubital nervure has the upper half almost straight, the lower has an oblique slope towards the recurrent nervure.

Length 25 mm.

Hab. Klackang.

Antennæ black, only slightly infuscated at the apex beneath. Clypeus covered with a silvery pubescence; the black mark is rounded and shortly stalked at the base; at the apex it is joined to the eyes by a transverse line; its upper half is closely, minutely and distinctly punctured; the face is more strongly and less closely punctured and projects slightly in the centre. Vertex sparsely punctured. There is a short yellow line, dilated in the middle on either side of the apex of the pronotum. Mesonotum closely and distinctly punctured; the punctures at the base form almost reticulations and there is there a distinct central and less distinct lateral keel on either side of it; it is thickly covered with longish fuscous pubescence. Scutellum less strongly and more sparsely punctured than the mesonotum and thickly covered with long brownish hair, this being also the case with the post-scutellum. The furrow on the centre of the mesopleuræ is curved; rounded on the basal half, straight and slightly oblique on the apical.

The clypeus is not so distinctly separated from the face as usual; the wing nervures are black; the stigma is fuscous; the clypeus is longer compared to its breadth than usual. It is readily known from the other Bornean species by the absence of yellow markings on the meso- and metathorax.

*Icaria Malayana*, sp. nov.

Black; the scape beneath, the sides of the clypeus broadly—the black central mark pyriform with a short broad pedicle at the base—the upper part of the pronotum narrowly, the upper

part of the sides broadly, the tegulæ, two large marks on the scutellum, transverse at the base, rounded at the apex and almost united, the post-scutellum, the metanotum, except in the centre; the apex of the 1st abdominal segment broadly, of the 2nd more narrowly, and of the 3rd still more narrowly, yellow. Legs black; the fore coxæ beneath broadly, a narrow line on the outer side of the middle and a broader one on the hinder pale yellow; the tibiæ and tarsi rufo-testaceous. Wings clear hyaline; the anterior half of the radial cellule smoky; the stigma and nervures dark fuscous. ♀

Length 7 mm.

Head and thorax covered with a pale pile. Front and vertex distinctly, but not very closely punctured; the punctures round and shallow; the clypeus is much more shining, more sparsely punctured, its greatest width greater than its length; its sides rounded above, its apex ending in a sharp tooth; its centre above is lightly roundly curved downwards. Mandibles shining, there is a yellow mark, longer than broad near the base; their apices piceous. Thorax closely and uniformly punctured except on the apex of the meso- and the base and lower part of the metapleuræ which are only sparsely punctured; the upper part of the latter bears some stout, curved striæ. Abdominal petiole short and stout; the 2nd segment as long as its width at the apex. Flagellum of antennæ black.

The head is larger than usual; the temples being broader and less obliquely narrowed than in most of the oriental species; its front, too, projects more broadly and roundly. The tegulæ are pallid yellow, darker on the inner side; there are two small yellow marks on the mesopleuræ.

A distinct species. Characteristic are the deep black body and large head, with well developed temples and almost transverse occiput.

*Icaria maculifrons*, sp. nov.

Head and thorax black, the petiole brownish, a longish line—narrowed below, transverse above—between and above the antennæ, a line on the inner orbits, commencing on the inner side of the lower part of the incision and becoming broader and

rounded, the side and apex of the clypeus—the black central mark, becoming gradually roundly, narrowed towards the apex—the prothorax, except the lower half of the propleuræ, tegulæ, scutellum, post-scutellum, a large oblique mark on the mesopleuræ two elongated pyriform marks on the metanotum, the apical fourth of the 2nd segment and the greater part of the others, yellowish. The legs black; the apices of the femora narrowly and the tibiæ and tarsi testaceous; the radial cellule lightly smoky, except at the base; antennæ rufo-testaceous. ♀.

Length 9 mm.

Hab. Santubong.

Front and vertex closely, but not deeply punctured, except over the antennæ. The clypeus is much less distinctly punctured; it is slightly longer than its greatest breadth; rounded downwards; the apical tooth is indistinct. Thorax closely punctured, the punctures, in places, running into reticulations; the apex of the post scutellum and the metanotum impunctate; the metanotum is widely and deeply furrowed in the centre; the sides of the furrow are oblique; the side sparsely, finely, obscurely striated. The abdominal petiole is elongated as in *I. variegata*; only about the basal third is narrowed; the 2nd segment is distinctly longer than its width at the base; it is brownish at the base. The 2nd cubital cellule is narrowed at the top, being there about one-fourth of the length of the 3rd.

Comes near to *I. marginata* and *I. variegata*. The Bornean species of *Icaria* seem to have the clypeus broadly black in the middle, e. g. *Ma'ajana* and *latebalteata*, Cam.

Mr. Shelford has taken at Kuching *I. ornaticeps*, Cam., hitherto only known from the Khasia Hills in Assam.

#### ANTHOPHILA.

##### *Megachile Cæcina*, sp. nov.

Black; the front, face and clypeus thickly covered with long fulvous hair, as are also the mesonotum, scutellum, the sides of the metanotum, the upper part of the mesopleuræ and the basal segment of the abdomen; the hair on the rest of the body is pale; the wings hyaline, with a slight violaceous line, the stigma dark testaceous, the nervures black. ♀.

Length 10 mm.

Hab. Trusan.

The vertex is strongly and closely punctured, the punctures all clearly defined; the sculpture on the front and clypeus is hid by the dense hair. Base of mandibles punctured; the apical tooth is long and sharp-pointed; the two sub-apical are of almost equal size. Mesonotum and scutellum closely punctured. The area on the metanotum is bare, opaque and is bordered by broad curved, shallow furrows. The basal segments of the abdomen are obscurely punctured; the penultimate segment is strongly and closely punctured and is covered with longish black hair; the last segment is much more closely and uniformly, but not so strongly, punctured; its base has an almost vertical slope; the apex projects and has a wide shallow incision in the centre above which is a spot of golden pubescence. The hair on the legs is long and pale, on the base of the hinder tarsi below, golden.

*Megachile Borneana*, sp. nov.

Black, the pubescence on the front, upper part of the thorax and on the apices of the dorsal segments of the abdomen, fulvous; on the clypeus and pleuræ pale; the apex of the abdomen with a broad, rounded incision; the wings hyaline, the radial and cubital cellules infuscated, the stigma fuscous, the nervures darker. ♀.

Length 10 mm.

Hab. Kuching,

Front and vertex rather strongly and closely punctured; the clypeus is quite as strongly, but not so regularly punctured and has an irregular, smooth line in the centre of the upper two-thirds. Mandibles rugosely punctured, smooth at the apex; the apical tooth is long; the 2nd and 3rd short, bluntly pointed; the 2nd is much shorter than the 3rd. Mesothorax, with the scutellum, closely and uniformly punctured; the median segment is not so strongly or closely punctured; the basal area is strongly aciculated and finely striated. Abdominal segments, including the transverse depressions, closely punctured; the last is more strongly punctured than the others; the basal segment is covered entirely with fulvous pubescence; the others



with narrow bands only. The hair on the legs is pale, on the under side of the base of the tarsi fulvous.

*Megachile esora*, sp. nov.

Black; the head, pro- and sides of mesonotum thickly covered with rufo-fulvous pubescence, the median segment laterally thickly covered with long white hair; the abdominal segments with narrow bands of white pubescence; the wings almost hyaline to the transverse basal nervure, beyond it fuscous violaceous; the scape white; the apex of clypeus bidentate. ♀

Length 11 mm.

Hab. Kuching.

Head rugosely, closely punctured; on the temples the punctures are larger and more distinctly punctured. The apex of the clypeus in the middle ends in two short, broad shining teeth; the part between them is roundly curved; the front and vertex are thickly covered with long rufous hair; the clypeus with pale fulvous pubescence, which is only visible when looked at laterally or from above. Mandibles strongly punctured on the apical half, the punctures are large and clearly separated; the base is rugosely punctured; there are only two teeth; the apical is large, the 2nd shorter and broader, more broadly rounded at the apex; the inner part forms two shallow curves. Pro- and mesothorax closely and strongly punctured and covered with rufous pubescence; the pleuræ more sparsely with longer, pale hair. The basal area on the median segment is smooth; the furrow at the base is crenulated, the rest closely punctured and covered with long white hair. The abdominal segments are fringed with white hair; the ventral scopa is white; the basal three segments are closely punctured all over; the 4th is smooth at the base and more narrowly at the apex, the intermediate space irregularly punctured; the 5th is irregularly punctured near the apex which is sparsely covered with long black hair; the 6th is thickly covered with short, stiff black pubescence. The apical part of the fore wings, from the transverse basal and the transverse median nervure (the cloud following their curves), dark fuscous-violaceous; the part behind clear hyaline; the hind wings are hyaline to shortly beyond the middle, the apex fuscous, with a violaceous tint.

Is not unlike *M. fuceta*, Bing., but that species has the apex of the clypeus transverse, not incised in the middle of the apex.

*Megachile gadara*, sp. nov.

Black; the hair on the head, thorax and on the abdominal segments, white; the mesonotum closely covered with small, round punctures; the white bands on the abdomen are narrow; the apical segment has a rounded, shallow incision in the middle; the wings hyaline, slightly infuscated at the apex; the stigma and nervures dark fuscous. ♂.

Length 9 to 10 mm.

Hab. Kuching.

Head in front thickly covered with long, pale fulvous hair; the clypeus closely and strongly punctured, as are also the front and vertex; the outer orbits thickly covered with long white hair. Mandibles at the base closely, but not very strongly, rugose; the top with irregular, scattered punctures; the teeth smooth and shining; the apical tooth is long, narrowed and rounded at the apex; the 2nd is shorter and bluntly pointed; the 3rd triangular, broad at the base, becoming gradually narrowed towards the apex and it is distinctly longer than the 2nd. Thorax strongly closely punctured; the median segment finely rugose; the thorax is thickly covered with long white hair. Legs covered with long white hair; on the under side of the tarsi the pubescence is golden; on the hinder part of the posterior tibiae is a thick line of depressed white pubescence. There is a shallow, curved incision on the base of the fore tibiae, the part at its base projecting into a small tooth; the incision at the base of the tarsi is larger and deeper. Abdomen closely, but not strongly, punctured; the basal transverse furrows are smooth, the apical closely punctured the last segment has a rounded shallow incision on the apex; above it is a large deep fovea, which is rounded and narrowed above. The penultimate segment is narrowed at the sides and has a broad, rounded incision at the base in the middle.

*Nomia violaceipennis*, sp. nov.

Black, shining; the thorax closely and strongly punctured, except on the centre of the median segment; the hair white; the

area on the metanotum closely longitudinally striated; the wings dark violaceous, darker at the apex; the tegulæ rufous. ♀.

Length 12 mm.

Hab. Kuching.

Clypeus and face strongly, but not closely, punctured, the clypeus slightly depressed in the centre and with a thin irregular keel down the centre; the face convex in the centre; the front and vertex are strongly and closely punctured, except at the ocelli; they are, as are also the outer orbits, thickly covered with long soft hair. Mesonotum closely, strongly and uniformly punctured; the scutellum is more strongly, but not so closely, punctured as is also the metanotum, except for a triangular smooth space near the top and a line down the centre; the furrow on its top is long, narrow and is closely, stoutly longitudinally striated. Propleuræ smooth, above thickly covered with white hair; the meso- closely and uniformly punctured and covered sparsely with short white hair; the meta- thickly covered with long white hair. Abdomen shining above, the segments, except at the apex, closely, minutely punctured. Ventral segments fringed with white hair. Legs thickly covered with long, soft white hair. The wings are paler in the middle and darker at the apex than at the base.

The basal slope of the 1st abdominal segment is thickly covered with long white hair; the apices of the segments are glabrous; the apex of the clypeus is transverse; the median segment has a vertical slope; the scutellum and post-scutellum are sparsely covered with long black hair; the median segment has a vertical slope; the hinder tibiæ and tarsi are not densely pubescent on the inner side and have a castaneous hue; the under side of the flagellum is fuscous.

Comes near to *N. fuscipennis*, Sm.

*Nomia bicarmata*, sp. nov.

Black; covered with pale pubescence; the head and thorax closely punctured; the apical half of the median segment deeply furrowed; the sides from shortly above the middle keeled; the apices of the abdominal segments covered with depressed white pubescence; the wings hyaline; the stigma fuscous. ♀.

Length 7 to 8 mm.

Hab. Kuching.

The scape of the antennæ appears thinner and longer than usual; the flagellum is brownish beneath. Head closely and distinctly punctured, the front more strongly than the rest; the clypeus is broadly, roundly raised in the centre, where it is bare, smooth and shining; its top and the face above it are bordered by smooth lines, mandibles rufous, black at the base; the hair is long and pale; the occiput is sharply margined. Mesonotum closely and strongly punctured, the hair on it is thicker and whiter round the edges; the scutellum has the hair longer and thicker; the post-scutellum is thickly covered with white pubescence, the furrow at the base of the scutellum is longitudinally striated. Median segment with an oblique slope; the centre on the apical half is furrowed; the sides on the apical half are distinctly keeled. The flocus on the hinder tibiæ is long and pale; on the tarsi it has a rufous tint. The basal four segments have a band of depressed white pubescence; the hair on the ventral surface is long and white. Characteristic of this species is the smooth, roundly convex, shining clypeus and the two keels on the sides of the median segment.

*Nomia iridescens*, Sm.

This species has been taken at Kuching. It has been recorded from India and Sumatra.

*Ctenonomia*, gen. nov.

Fore wings with three cubital cellules, of nearly equal size. Head narrow, the temples short, ocelli in a curve. Abdomen short, ovate; the ♀ with a dense ventral scopa; its apical segment with a rima. Pronotum keeled; the keel widest on the sides. Metonotum large, transverse, flat, stoutly keeled on the sides and apex and longitudinally striated; its apex with a perpendicular slope. Legs densely covered with long hair; the spurs toothed; the claws cleft unequally. The body is short and broad. The wings are large: their stigma thick; the basal nervure is roundly curved; the transverse median nervure is received shortly behind it; the 1st recurrent nervure is received

near the apex; the 2nd not quite so close to the apex. The eyes are large, reach close to the base of the mandibles and converge distinctly on the top. The face is roundly convex; the clypeus is nearly as long as it, is broader than long and transverse at the apex. The tegulæ are moderately large. The scape of the antennæ is long and slender; the flagellum thick.

The affinities of this genus appear to be with *Nomia* from which it may be known by the pectinated spurs, by the large, keeled median segment, by the ventral surface being thickly covered with long hair, by the distinct anal rima and by the stoutly keeled collar. Having only a single specimen I have not been able to make an examination of the trophi, but the maxillary palpi appear to be 6-jointed.

*Ctenonomia carinata*, sp. nov.

Black; the head and thorax sparsely covered with short, the legs and ventral surface thickly with long white hair, on the under side of the tarsi it has a fulvous tint; the wings hyaline the nervures and stigma black. ♀.

Length 6 to 7 mm.

Hab. Matang.

Head opaque, the vertex more shining and smoother; the front has a narrow keel down the centre; the clypeus is irregularly punctured on the apex. Mesonotum opaque, closely, minutely punctured; in the centre are three impressed longitudinal lines. The striæ on the median segment are stout, clearly separated, irregular, and mostly reaching to the apex of the basal part; the bounding keels project as teeth at the apical angles; it is bare, shining and impunctate as is also the apical slope. Abdomen shining: the apices of the segments brownish and bare; their base covered with close white pubescence; the anal rima is brownish.

*Xylocopa caerulea*, Fab.

Mr. Shelford has taken the rare ♂ of this species. The head is narrower than in the ♀; and instead of the head, thorax and base of abdomen being covered with blue pubescence, they are covered with light soot-coloured hair; the hair on the abdo-



men is darker soot coloured; and the antennæ and legs are piceous. The wings are lighter coloured, wanting the deep violaceous tint found in the ♀.

Smith (Trans. Ent. Soc. 1874, 269) appears to have had a ♂ with blue hair on the head and thorax. Mr. Shelford's example is only 17 mm. in length. The species is common all over the Oriental Region, but no author, except Smith, l. c., has described the ♂.

*Xylocopa (Koptortsoma) Sarawakensis*, sp. nov.

Black; the head, thorax and basal segment of abdomen thickly covered with olive-green hair; the 2nd abdominal segment with darker olive-green pubescence; all the tibiæ and the four front tarsi fringed with long pale olive-green hair; the hair on the hinder tarsi black mixed with dark olive hairs on the under side; on the base of the 3rd and following dorsal segments of the abdomen are two patches of whitish depressed hair which are rounded at the apex; the part underneath them is brown and shining; the apex of the last segment is fringed with whitish hair. The hair on the ventral segments is black; paler on the edges and on the sides of the basal segments. Wings dark fuscous, with a distinct violaceous tinge ♂.

Length 22 mm.

Hab. Matang.

Flagellum of antennæ brownish beneath; the base of the scape fuscous. Clypeus closely punctured, a black hair issuing from each tubercle; its centre is not keeled; its apex is smooth, shining and raised. Mandibles shining, shagreened in the middle to near the apex: they have only one tooth which is long and roundly curved on the inner side. The 3rd transverse cubital nervure is roundly curved outwardly; the 2nd recurrent nervure is received at fully the length of the 2nd transverse cubital nervure from it. The fore femora and tibiæ are slender; the upper spur is long and curved and below has a broad white, rounded at the apex, membranous projection. The base of the hinder femora projects oblique downwards into a stout triangular tooth; in front of this is a shorter, more slender tooth which is roundly curved at the apex. The fore trochanters project triangularly behind.

Comes near to *X malayana*, Cam. The white patches on the back of the abdomen may be hidden under the apex of the preceeding segments.